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The Macroeconomic Impact of Federal Pollution Control Programs: 1978 Assessment

Data Resources, Inc, Lexington, MA

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THE MACROECONOMIC IMPACT OF FEDERAL POLLUTION CONTROL PROGRAMS 1978 ASSESSMENT

SUBMITTED TO
THE ENVIRONMENTAL PROTECTION AGENCY AND
THE COUNCIL ON ENVIRONMENTAL QUALITY

DATA RESOURCES, INC.

JANUARY 29, 1979

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An analysis of the macroeconomic impacts of federal air and water pollution control legislation on the U.S. economy. The analysis relies upon CEQ incremental abatement cost estimates. Figures were provided for capital investment, annualized capital costs, and operating and maintenance costs on an industry-by-industry basis, with additional data for state and local governments costs and costs associated with mobile source regulations. The figures reflect only incremental costs, i.e., the extra costs which occurred solely as the result of federal legislation. As such, they do not reflect some pollution control outlays which would have been undertaken even in the absence of the legislation.

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INTRODUCTION

This study presents an analysis of the macroeconomic impacts of Federal air and water pollution control legislation on the United States economy. The analysis relies upon incremental abatement cost estimates provided by the Council on Environmental Quality (CEQ) and the Environmental Protection Agency (EPA) for the period 1970-1986. Figures were provided for capital investment, annualized capital costs, and operating and maintenance costs on an industry-by-industry basis, with additional data for state and local governments' costs and costs associated with the mobile source regulations. The figures reflect only "incremental" costs, i.e., the extra costs which are incurred solely as the result of Federal government legislation. As such, they do not reflect those pollution control outlays which would have been undertaken even in the absence of the legislation.

The analyses were carried out using the Data Resources (DRI) macroeconomic model of the U. S. economy and covered the period 1970-1986. For the historical period (1970 through the second quarter of 1978), the analyses estimated how economic conditions would have deviated from those that actually existed if there had been no incremental pollution control costs. For the post-1978:2 forecast period, the basis of comparison was DRI's latest long-term trend forecast. This forecast shows modest economic weakness in 1979, a 1980 rebound, with trouble again cropping up in late 1981. Beyond that, the economy gradually returns to a stable growth path. This base simulation includes total pollution control expenditures and is thus called the "with" scenario in this study. Appropriate adjustments were made to this base simulation to take out the incremental costs associated with the Federal legislation, as estimated by CEQ. Full dynamic simulation of the model then provided for the complete assessment of the indirect macroeconomic effects of these programs on overall growth, employment levels, inflation, financial markets, and so forth.

Two sets of supplemental analyses were also performed. The first set analyzed the implications of possible government efforts to offset the legislation's impact on either real growth, inflation, or financial markets. The second set analyzed the implications of environmental expenditures being higher or falling off much more sharply than originally estimated.

No attempt was made to include the benefits resulting from pollution control expenditures in any of the analyses presented here. Incorporating such impacts as the changes in income, productivity, and labor force participation ensuing from the greater health of the population, decreased expenditures on medical services, cleaning costs, and other things, and changes in health-expenditure-related transfer payments would, of course, change the results of the analyses.

PRINCIPAL CONCLUSIONS

The incremental pollution control expenditures which were mandated by the Federal environmental legislation have had three principal effects on the U. S. economy:

1. The inflation rate has been made slightly higher. The costs associated with the production of a given unit of output have been raised by the mandated investment requirements, and these additional costs are showing up in higher prices.

2. The real level of economic activity, as measured by the gross national product, has been stimulated by the extra investment required under the legislation and the investment generated in supplying industries. By 1981, however, the impact is expected to become negative, as the reduced productivity and higher inflation take their toll.

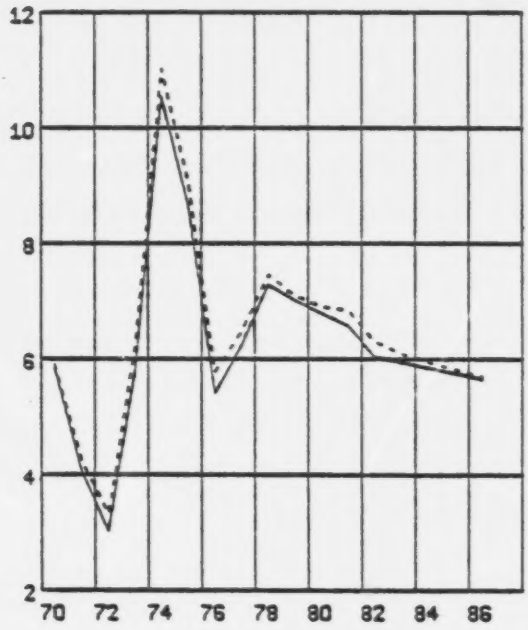
3. Employment opportunities are found to be greater throughout the 1970 to 1986 period. Jobs are created in the pollution-control equipment and construction supplying industries as well as in maintenance and service of the additional equipment.

The incremental pollution control expenditures have contributed to inflation by imposing higher production costs on firms which are passed through directly and indirectly into higher product prices. The higher costs stem from two sources: (1) unit labor costs are raised, as additional maintenance and operation staff must be employed, with no resulting increment in output; (2) investment requirements to produce a given unit of output are also raised by the mandated pollution-related expenditures. By 1986, wholesale prices (on the commodity basis) will be 4.2% higher than they would have been without these incremental expenditures. This translates into an average change of 0.3 percentage point per year. Consumer prices will be 3.6% higher (averaging 0.2 percentage point a year), and the overall GNP deflator will be 3.7% higher (0.2% a year). The maximum differential on the inflation rate came in 1973 and 1974, when the extra pollution abatement-related expenditures added further inflation pressures to an already overheating economy.

THE IMPACT OF POLLUTION ABATEMENT EXPENDITURES: PRINCIPAL CONCLUSIONS

Chart 1
Higher Inflation

Consumer Price Index
(Annual Rate of Change)



...With pollution abatement standards
—Without the standards

Chart 2
Better Employment Prospects

The Unemployment Rate (%)

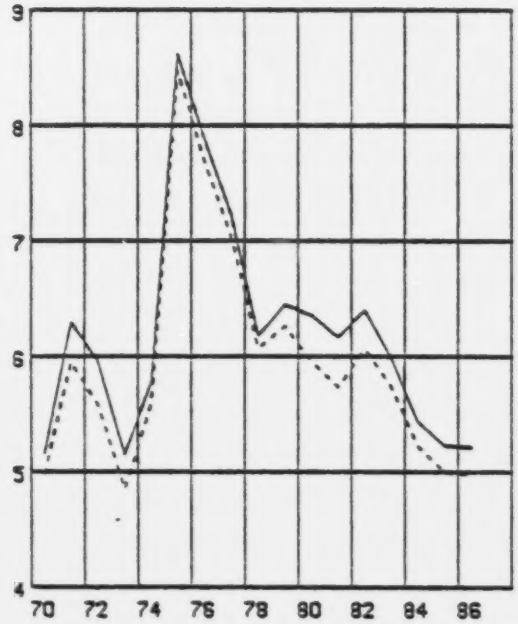
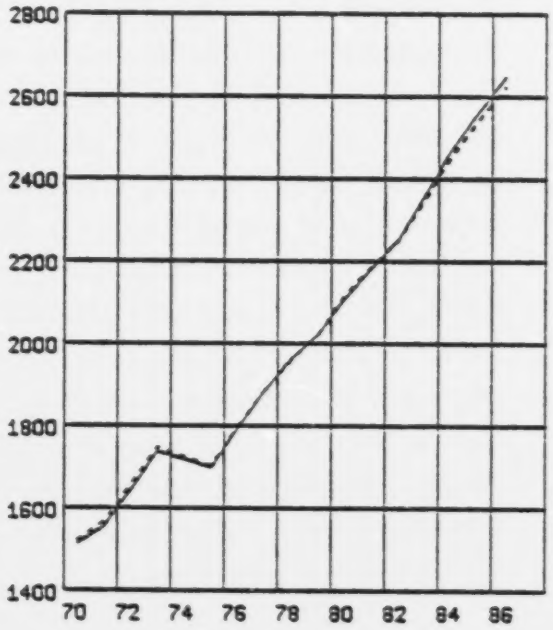


Chart 3
Mixed Results for Economic Activity

Real GNP - 1977 Dollars



The impact on real growth varies over the period analyzed. At first, the extra investment and other expenditures provide a stimulus to the economy, offsetting the negative impacts from the higher inflation and reduced productivity. The widest positive gap comes early on, with real GNP near 0.9% higher in both 1971 and 1972 with the incremental pollution spending. During the 1973 boom period and the subsequent recession this gap narrows significantly as the incremental investment is forced on a system already running into capacity constraints. But the net increase in real GNP generally continues through 1981, although the magnitude of the differential varies depending on the underlying economic conditions. After 1981, the negative impacts from the higher inflation and reduced productivity take their toll, and real GNP ends up 0.9% lower than it would have had there been no incremental pollution control expenditures.

The pollution control outlays help stimulat employment throughout the period of analysis. Jobs are created in manufacturing and installing pollution control equipment and in operating and maintaining this extra capital investment. Over the 1982 to 1986 period, even when real GNP has fallen below the "without" case, the unemployment rate remains lower by a consistent 0.2 percentage point. The incremental employment in the face of reduced output produces the lowered productivity results, which in turn help produce the higher inflation.

The fundamental forces producing these results on inflation and economic activity are outlined in greater detail in the following sections. One crucial question in the analysis is the extent to which the mandated pollution control capital investment will substitute for other investment ("crowding out"), versus the extent to which the investment occurs in addition to normal plant and equipment investment. In an economy operating at full productive capacity, a significant portion of the pollution control spending would have to come at the expense of other outlays, with the housing sector particularly vulnerable to this reallocation of funds. Accommodating monetary policies could, however, alleviate some of the dislocations. These policies were not adjusted in the basic analyses summarized here, but were in a supplemental simulation discussed later.

The DRI analyses do show that, largely because of their impact on interest rates, pollution control investments do partially displace other investments. This displacement largely occurs in the housing sector. In the nonresidential sector, the pollution control investments initially result in a higher real GNP path, which in turn stimulate more plant and equipment investment than would have occurred otherwise. Later on, the impact of the higher inflation and interest rates dampen investment outlays by more than the incremental costs alone. New investment becomes more costly because of pollution requirements, which causes firms to reduce their new investment plans.

POLLUTION CONTROL COSTS

The estimates of pollution control costs used in these analyses were developed by the Council on Environmental Quality on the basis of (1) information on past pollution control expenditures collected by the Department of Commerce, and (2) estimates of the required pollution control expenditures prepared by the Environmental Protection Agency. Estimates of air and water pollution control expenditures were made for individual industrial sectors (at the 2-digit SIC level); automobiles; publicly-owned waste water treatment facilities, solid waste disposal facilities, and other public buildings and institutions; and for nonindustrial business sectors such as commercial establishments and transportation. The cost estimates used in this analysis are equivalent to those reported in CEQ's 1978 Annual Report, Environmental Quality.

The CEQ estimates attempt to distinguish between total pollution abatement expenditures and the "incremental" pollution abatement expenditures made in response to Federal environmental legislation. CEQ's estimates of total pollution abatement expenditures are equivalent to total reported expenditures prior to 1978 and include the EPA estimates of total needed expenditures in the period after 1978. CEQ than subtracts its "baseline" expenditures from these totals to produce its "incremental" estimates. The "baseline" expenditures represent CEQ's estimates of what would have been spent if businesses and governments had not changed their expenditure patterns from what they were in the period 1963 to 1967. CEQ estimates that baseline expenditures account for approximately 25% of total industry pollution abatement expenditures over the period.

The CEQ estimates are summarized in Table 1. Incremental industrial capital investment in pollution control was estimated to be $2.5 billion in 1970—1.9% of total capital investment. Incremental investment hits a peak of $8.4 billion in 1984 when it would comprise 4.5% of total plant and equipment investment.

POLLUTION CONTROL COSTS: THE UNDERLYING ASSUMPTIONS
FOR INDUSTRIAL AND COMMERCIAL INVESTMENT

Chart 4

Total and Incremental Pollution Abatement Expenditures
(Billions of 1977 Dollars)

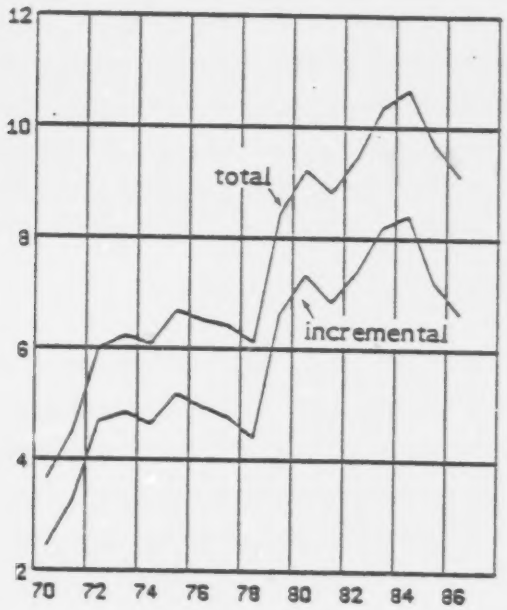


Chart 5

Total and Incremental Pollution Abatement Expenditures
As a Percent of Total Capital Spending

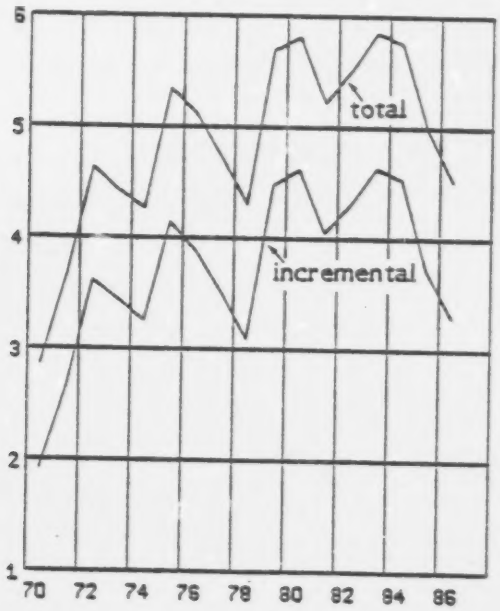


TABLE 1

Estimated Incremental Investment For Pollution Control, 1970-1986
(Millions of 1977 Dollars)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
All Industries	2,458	3,258	4,690	4,848	4,640	5,181	4,946	4,770	4,405	6,643	7,338	6,849	7,402	8,208	8,413	7,216	6,659
Manufacturing Industries	1,450	1,931	2,800	2,897	3,092	3,671	3,195	3,013	2,755	3,582	4,095	4,373	4,503	4,907	4,740	4,493	4,337
Primary Metals	269	361	556	587	661	892	753	719	654	804	979	968	950	1,057	572	520	484
Electrical Machinery	14	22	35	36	34	23	25	22	18	37	44	45	51	50	48	45	37
Non-electrical Machinery	10	19	35	37	39	30	34	31	25	45	41	38	32	32	26	19	17
Transportation Equipment	59	75	103	106	94	54	56	53	49	97	137	178	213	252	287	206	219
Stone, Clay & Glass	76	101	157	167	213	157	75	70	62	97	154	217	280	316	378	274	170
Other Durables	47	72	119	125	163	130	91	82	70	99	90	84	82	75	69	62	61
Food incl. Beverage	117	149	197	200	176	139	168	161	149	400	554	674	749	716	788	796	806
Textiles	16	21	27	27	26	36	43	41	38	94	156	219	241	254	266	270	248
Paper	208	265	356	363	487	572	359	339	317	492	640	638	635	631	629	626	623
Chemicals	251	318	415	420	536	733	847	809	764	931	793	794	798	1,048	1,351	1,352	1,357
Petroleum	373	512	773	800	616	864	702	648	574	415	414	410	348	342	174	194	214
Rubber	2	5	11	12	27	15	18	17	14	34	40	47	54	61	67	53	39
Other Nondurables	9	11	16	17	22	26	24	23	21	37	53	61	69	73	84	75	64
Nonmanufacturing	1,008	1,327	1,889	1,951	1,548	1,510	1,751	1,757	1,649	3,061	3,243	2,476	2,899	3,301	3,674	2,724	2,322
Mining	59	75	98	98	24	63	71	49	47	119	85	54	72	88	102	70	58
Public Utilities	750	999	1,444	1,492	1,398	1,297	1,532	1,569	1,473	2,845	3,061	2,269	2,675	3,060	3,418	2,500	2,109
Commercial	200	253	348	361	126	150	147	140	129	97	97	153	152	154	154	154	155
State and Local Government	-38	490	310	143	1,378	1,548	2,635	2,310	2,434	2,960	3,190	2,902	2,442	1,888	1,542	1,705	1,778
Mobile Source Emission Control	505	599	581	1,499	1,011	2,123	2,622	2,755	2,728	2,679	3,633	5,430	5,288	5,475	5,667	5,756	5,756

THE UNDERLYING ECONOMIC PATH

The impact of the pollution abatement costs depends critically on the state of the economy on which the incremental costs are imposed. The 1970-1986 period over which the analysis was performed contains many variations in the pace of economic activity and inflation levels. The historical period contains the 1972-1973 boom period, characterized by an economy operating at or near full-employment, with high demands from all sectors creating supply shortages in many areas which in turn escallated the rate of inflation. The ensuing recession was precipitated by many factors: the OPEC quadrupling of oil prices, significant farm price shocks, extra inflation induced by the supply bottlenecks and the ending of price controls, a credit crunch stimulated in part by continued tight controls on monetary policy, and generally overblown expectations for continued prosperity. The 1976-mid 1978 period reflects the steady growth of the recovery period, although the economy does not attain full employment.

The economic path for the forecast period reflects DRI's latest long-term trend scenario. Over the next several years, DRI projects some modest variations in growth, with slow growth in 1979 followed by a strong 1980 rebound. Weakness again shows up in late 1981. Subsequently, this trend path portrays growth returning to above-trend rates by mid-1982; and 1983 to 1985 are relatively strong years, bringing the economy toward the full-employment level, although the gap does not fully close until 1985.

The historical data and the DRI forecast both incorporate the impact of the Federal environmental legislation. Thus they define the "with" scenario in the present analysis. Incremental costs were removed to produce the "without" case.

DIRECT CHANGES

The following direct changes were made to the "with" path to remove the incremental pollution abatement costs. Reasons underlying these changes and their impacts are spelled out in the following sections. A more detailed explanation of the nature of the changes will be available in the technical appendix.

1. Decrease business investment, by industry, by the magnitude of the incremental investment totals developed by CEQ (see Table 1).

2. Increase the cost of new productive capacity because pollution standards force business to spend more for new facilities without increasing their output.

3. Adjust financing costs to reflect the fact that many pollution abatement outlays can be financed more cheaply than other investment through tax-free bonds.

4. Adjust industry-by-industry prices to reflect their increased production costs. A special model was used to determine the time frame over which the different industries would be able to pass through these additional costs.

5. Adjust the employment figures to reflect the additional employment associated with the operation and maintenance of the pollution abatement equipment.

6. Reduce state and local government outlays and remove the associated Federal pollution control grants to state and local governments.

7. Adjust new car prices to reflect the incremental costs of the pollution control equipment.

8. Adjust car repair outlays to reflect maintenance costs associated with pollution control equipment.

9. Adjust gasoline purchases to reflect the lower gasoline mileage associated with cars equipped with pollution control equipment.

10. It was decided to hold real government outlays, not nominal outlays, constant. Thus, the changed inflation in each case does not flow through into changed fiscal stimulus. Monetary policy was also held constant in the core analysis.

ECONOMIC IMPACTS

The economic impacts of the incremental pollution abatement expenditures are outlined by sector below.

Inflation

The pollution abatement investment outlays worked to create extra inflation in three ways:

1. The increased factor demands associated with the operating and maintenance of pollution abatement equipment[1] resulted in a drop in labor productivity. Any given firm would now require additional employes to produce the same level of output. Further, the capital stock, which helps make the workers produce more, had been diluted with a portion which made no contribution to production.

   The DRI model solution results indicate that productivity was 0.5% lower by 1978 and 1.4% lower in 1986, given the pollution requirements. Over the entire period, productivity growth averaged 0.1 percentage point a year less. The reduction in productivity growth produces higher unit labor costs (the cost of labor associated with the production of a given unit of output). Initially these produce reduced profit margins, eroding corporate profits, but over time they get passed on in the form of higher prices.

2. Investment costs per unit of output as well as labor costs were raised by the pollution standards. Initially, these incremental costs also cut into profits, but are again later passed on in the form of higher prices. The timing of this pass-through was determined on an industry-by-industry basis, using a specialized modeling system that relates demand pressures and market factors to ability to pass through costs.

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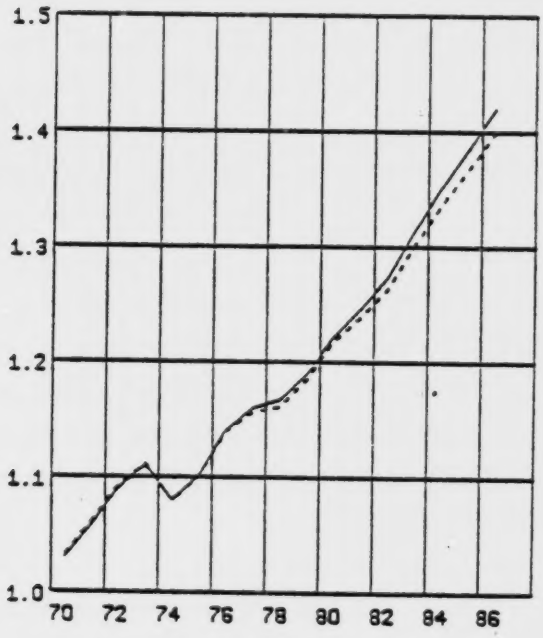
[1] The amount of incremental employment was derived by applying an estimated annual salary to labor's share of the total O&M expenditures.

Chart 6
Impact on Productivity
(Output per Hour, Index: 1967=1.00)



...With pollution abatement standards
—Without pollution abatement standards

3. Further, the extra demand for investment goods will also serve to bid up the prices for construction and equipment materials. The impact again will depend on the underlying economic conditions. The 1972-73 boom period already evidenced significant materials price pressures. Again in 1977-78, the boom in residential construction activity was already adding to price pressures in this area, making the demand-based inflation pressures from extra construction activity particularly strong.

The impact of the productivity declines, the pass-through of the extra investment costs by business, and the extra demand pressures combine to produce higher inflation rates in the "with" pollution outlay path. From 1970 to 1986 wholesale prices rise an average of 0.3 percentage point a year faster and consumer prices rise 0.2 percentage point faster. These price impacts include the full feed-back effects of higher inflation reducing the level of economic activity, which in turn serves to reduce the inflation as demand pressures ease.

Business Fixed Investment

The incremental pollution investment for both air and water pollution control required investment of $2.5 billion[1] in 1970, rising to a peak of $8.4 billion in 1984. Over the eight year historical period (1970-1977) outlays averaging 3.3% of total capital investment were required to comply with the standards. For 1978 to 1986, CEQ estimates show incremental expenditure requirements which average 4.1% of total plant and equipment investment.

The direct investment generates extra investment requirements in the down-stream industries. The DRI model contains industry-specific production models driven by final GNP demands. These models translate the incremental investment in the "with" case into extra output and employment. This occurs most notably in the major industries producing pollution equipment and their suppliers. Similarly, the unemployment rate is determined from an output-based equation, so that incremental investment, taken alone, will work to reduce the unemployment rate.

The DRI model contains detailed modeling of the financial flows which are associated with the incremental investment. Corporate portfolio adjustments are made distributing financing requirements appropriately between internal funds, new equity and borrowing. The model translates the increased loan demands into pressures on financial markets, causing higher interest rates and reduced availability of loanable funds. The resulting impacts depend upon the underlying financial pressures: for instance, they were particularly severe during the credit crunch of 1973. These changes to credit markets form the major linkages whereby the incremental pollution investment reduces other private investment.

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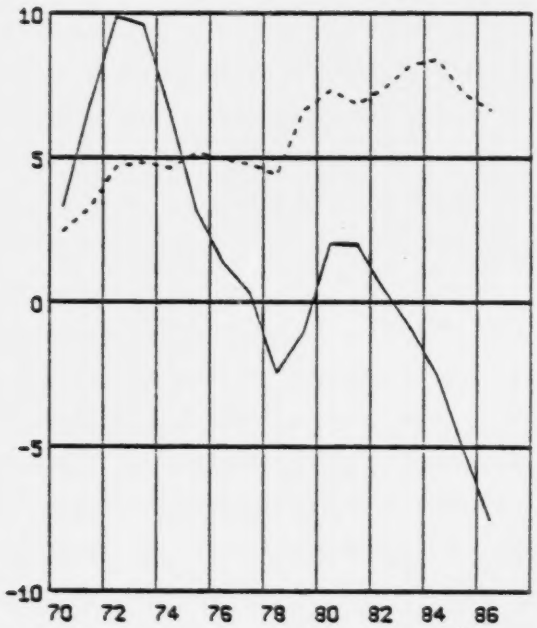
[1] All figures in this report are expressed in constant 1977 dollars unless otherwise indicated.

RESULTS FOR BUSINESS FIXED INVESTMENT

Chart 7
Real Business Fixed Investment
(1977 Dollars)



—The result: investment in "with" minus "without"
...Direct change: incremental investment for pollution abatement equipment

HIGHER INTEREST RATES PRODUCE HIGHER EXTERNAL FINANCING COSTS

Chart 8
Interest Rates

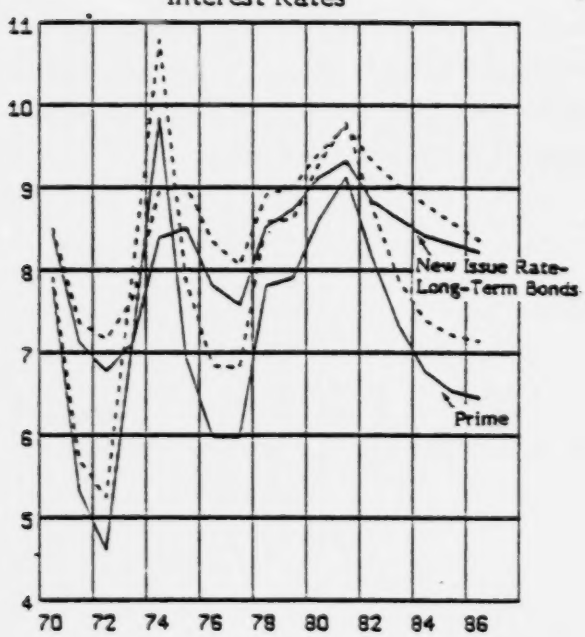
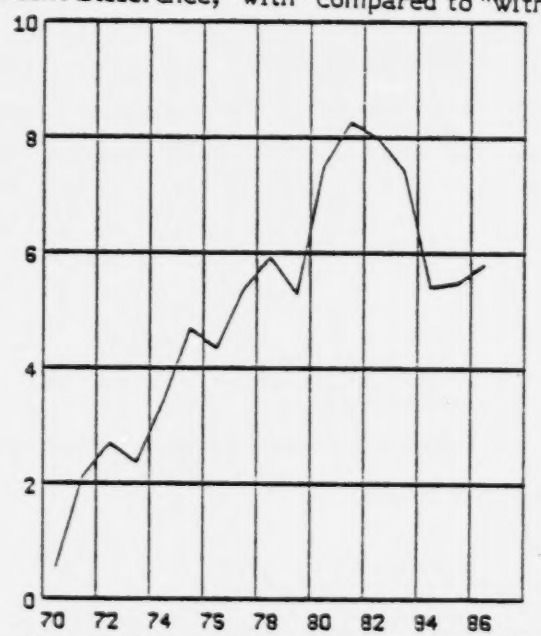


Chart 9
External Finance Cost*
(Percent Difference, "with" compared to "without")



*External financing costs reflect a weighted average of debt and equity costs

RESULTS FOR BUSINESS FIXED INVESTMENT (CONTINUED)
RENTAL PRICE OF CAPITAL RAISED

Chart 10
Rental Price - Equipment
(Percent Difference,
"With" Compared to "Without")

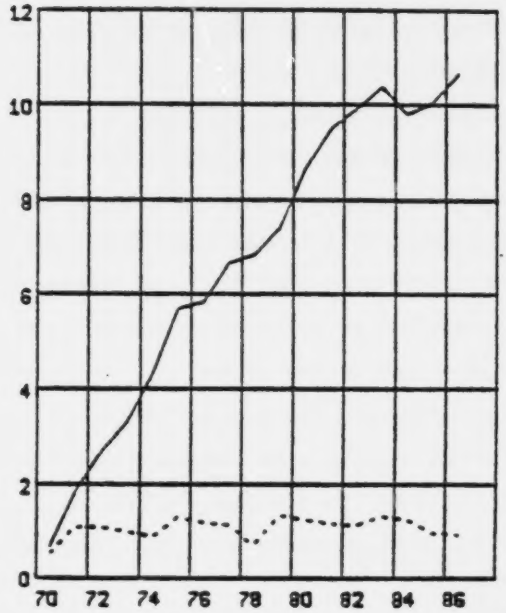
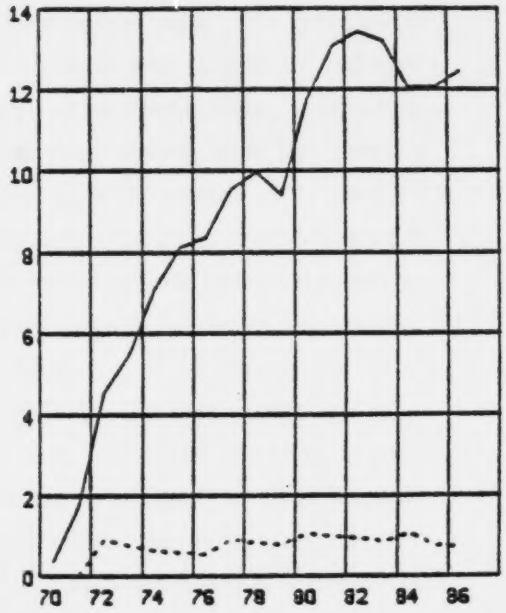


Chart 11
Rental Price - Plant
(Percent Difference,
"With" Compared to "Without")

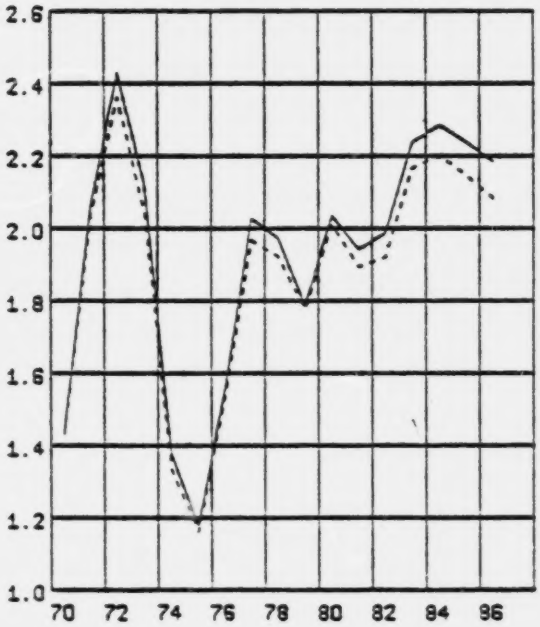


—difference
...direct change imposed

HOUSING

Chart 12
Impact for Housing Starts
(Millions of Units)

...With
—Without



Total new investment is further affected because of the increased effective cost of new plant construction or equipment purchase. More investment will now be required to produce the same level of output, causing firms to require increased profitability from new, "productive" investments. This increased cost of new investment raises the cost of capital. This change has a powerful impact in the DRI model. When compounded by the higher interest rates, it dampens business investment by even more than the incremental pollution requirements. The negative impact of the higher cost of capital outweighs the positive stimulus for investment associated with the extra consumer demands generated by the incremental employment created. By 1986, real business fixed investment is $7.5 billion (2.5%) below the case without the pollution requirements, at a time when the incremental costs of pollution abatement legislation is $6.7 billion. The pattern of the investment change is not smooth, as the chart indicates. Early on, the extra demand generated by the incremental investment and employment produces higher total investment results. This begins to taper off as the effect of the higher interest rates increases. In particular, the gap between the two scenarios widens sharply in 1977-1978. This was a period of near credit-crunch conditions, and the reduced financing pressures associated with removing the pollution-related expenditures have a major impact in stimulating new investment. This reverses temporarily in the early-80's.

Housing

The pollution control investments also serve to reduce residential investment activity by forcing up interest rates. The generally higher interest rates are reflected in higher mortgage rates which result in a reduction in housing activity. The full dynamic solution, which includes this and all the other impacts, shows housing starts dropping to below their "without" level almost immediately. The 1973 impact is particularly large because of the existing credit crunch. In that year, housing starts are 3.7% lower with the pollution regulations. This result eases a bit over the next several years, although negatives do show up again in the boomy housing period of 1977-78. They also show up again at the end of the period of analysis, as the economy approaches full employment and competing investment demands increasingly require substitution of funds from other sources.

Consumer Spending

Real consumer spending is affected directly in the simulation by the incremental costs associated with automobile pollution controls. Pollution control equipment adds to the cost of purchasing a car.[1] The additional maintenance expenditures affected car repairs, and the operation costs reflect extra gasoline consumption.

The direct impact of these incremental costs is to divert spending from other categories of goods or to reduce saving in the "with" case compared to the"without," assuming no change in incomes. However, the extra employment associated with the pollution control programs does produce a higher income flow, with its associated multipliers.

Other effects on consumer spending result from the extra inflation and higher interest rates working to reduce consumer spending, creating greater debt burden financing requirements and stimulating increased savings to hedge against future financial difficulties. All these factors interact together to produce the final result for consumption.

In the aggregate, total real consumption stays higher through 1982 in the "with" case. Higher real incomes resulting from the increased employment are largely responsible, with the increased gasoline and car repair outlays a second major cause. By 1986, however, real consumption falls to 0.8% below the "without" case. Auto purchases are the hardest hit, with real outlays lower throughout the period (except at the very initial phase), because the higher prices for new cars force people out of the new car market. Furniture outlays are another category that is hard-hit, mirroring the negative impacts on new housing activity. Durable purchases end up 2.6% lower than in the "without" scenario. Real nondurable purchases are higher for most of the period, although response to the lower incomes at the end does finally close the gap by 1986. Service consumption falls below the "without" case in 1983 and ends up 0.4% lower, largely reflecting reduced housing-related service demands.

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[1] BLS counts the pollution control devices as a quality improvement, and hence the extra equipment has not shown up in higher consumer prices. However, in an effort to capture the true economic impact, their cost was factored in through the new car price.

IMPACT ON CONSUMER SPENDING

Chart 13
Direct Changes Made to Consumption:
Increased Gasoline Use and Car Repair
(Billions of 1977 Dollars)

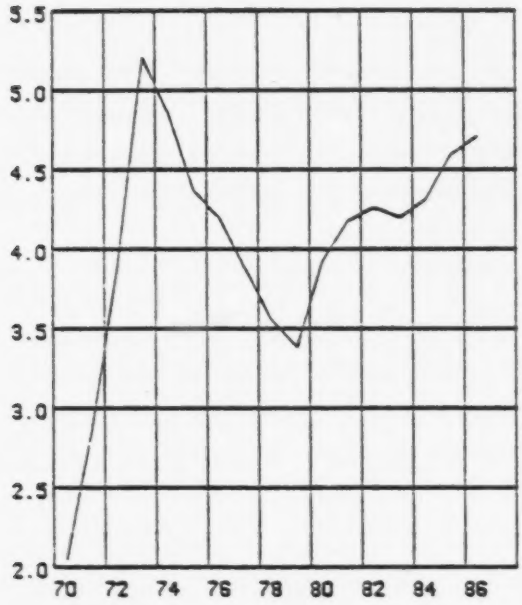


Chart 14
Total Change in Consumption
(Percent Difference, "With
Compared to "Without")
Early Consumption Gains From Additional
Employment Lost As Real Disposable
Income is Eroded

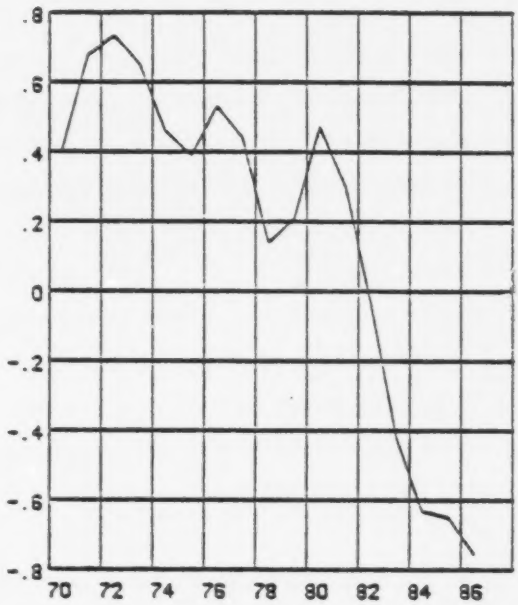
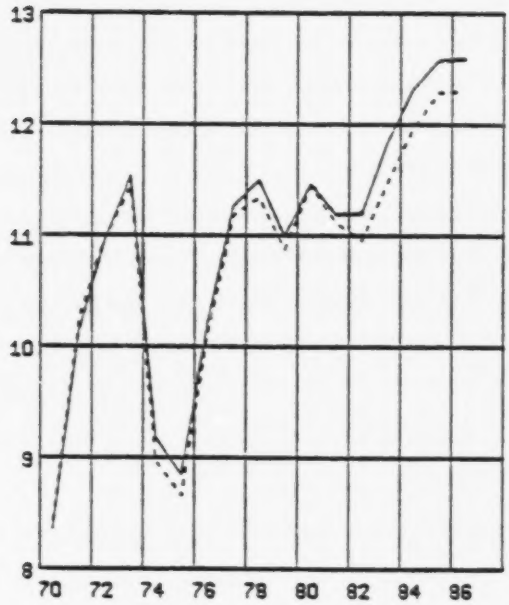
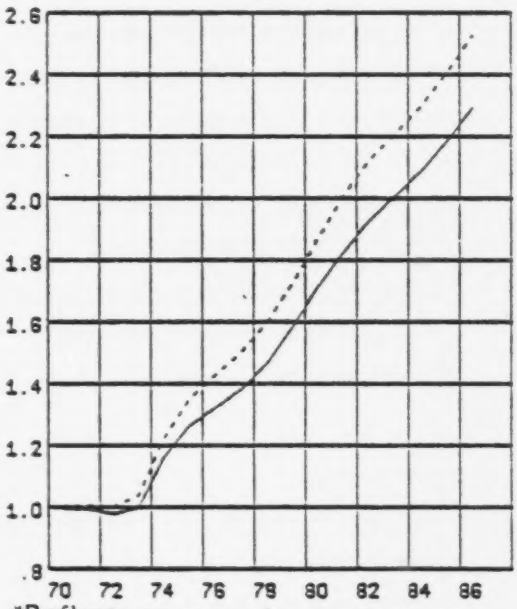


Chart 15
Unit Car Sales
(Million Units)



...With pollution abatement standards
—Without pollution abatement standards

Chart 16
Cost of Car Ownership*
(1972=1.00)



*Reflects new car price, car loan rate
and gasoline and maintenance costs

Government

The pollution abatement legislation also mandates increased outlays for state and local governments. Most of this was funded through Federal grants-in-aids. The CEQ estimates indicate that in some years state and local governments are spending less on investments in municipal waste water treatment facilities with the legislation than they would have been without it, even though total expenditures are higher. The reason is that the rapid increase in Federal aid substitutes for much of the money that these governments would have been spending in the absence of the legislation. However, the local governments are fully responsible for the higher O&M costs associated with these facilities as well as the costs of reducing air pollution. Hence the net effect requires no state and local tax adjustments, but it does represent a net increase in real government spending. Federal government financing requirements to fund the incremental grants-in-aid placed a marginal further strain on financial markets.

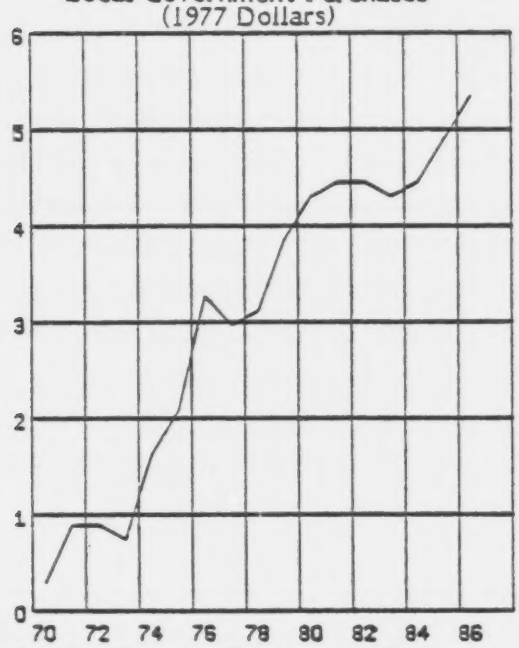
The economic analysis does make one important assumption about the government sector. With government budgets set in nominal terms, a rise in inflation effectively reduces the extent of fiscal stimulus. Although the sudden impact of the extra inflation may produce this result in the very short-run, it was assumed that over the long haul the Federal budgeting process would attempt to maintain a specific level of benefits, and hence the real Federal spending totals were held constant between the "with" and "without" scenarios.

Trade Sector

The impact of the pollution abatement requirements on the U. S. trade balance reflects the combined influence of many factors. Higher domestic prices serve to put U. S. goods at a competitive disadvantage in our export markets, while making imports relatively more attractive. In the earlier years, the higher domestic investment also works to increase import demands. Later on, the reversal of the real GNP results partially mitigate this influence. The full model simulation indicates that real imports rise to a peak of 3.3% higher in the "with" case then taper off to 0.9% above by 1986. Real exports fall to 0.8% below the "without" case in 1986.

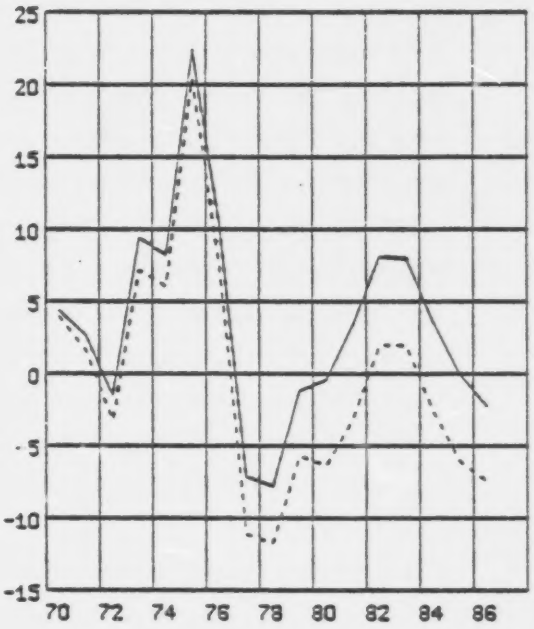
GOVERNMENT AND TRADE SECTOR

Chart 17
Direct Changes Made to State and Local Government Purchases*
(1977 Dollars)



*Federal Funding Was Assumed to Offset the Bulk of This Spending

Chart 18
Deterioration in the Nominal Trade Balance
(Current Dollars)



Results for the Trade Sector:
Exports Hurt and Imports Stimulated

Chart 19
Real Exports
(1977 Dollars)

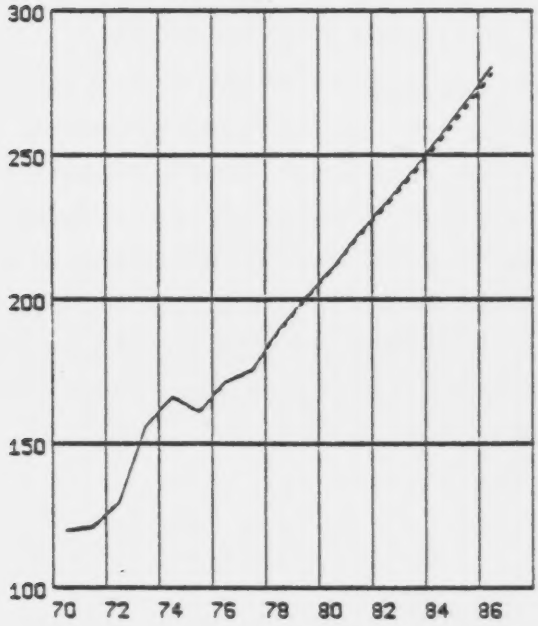
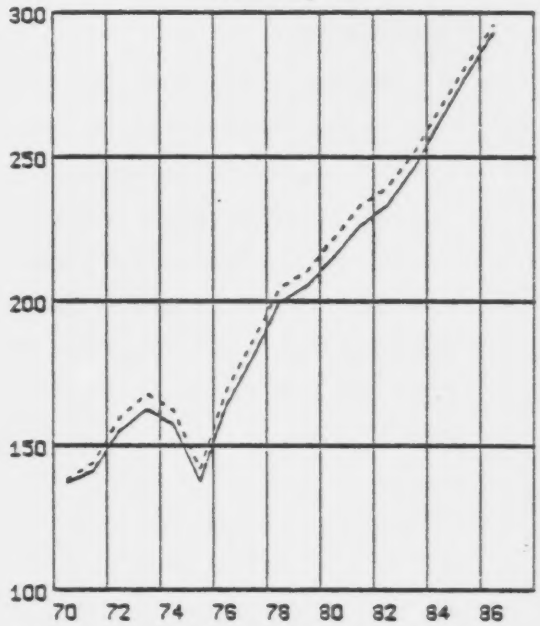


Chart 20
Real Imports



...With pollution abatement standards
—Without pollution abatement standards

Conclusion

Table 2 provides a summary of the principal findings of this analysis. The pollution abatement requirements were found to increase overall inflation by an average of 0.2 percentage point a year over the 1970 to 1986 period. Real GNP improved initially, reflecting the stimulative impact of the increased expenditures, but by 1986 is found to be 0.9% lower. Unemployment is actually 0.2 percentage point lower with the pollution requirements, primarily because of the jobs involved in operating and maintaining the pollution control equipment.

TABLE 2
Estimated Impact of Pollution Control Expenditures
on the Economy -- 1970-1986

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Gross National Product, Current Dollars																	
WITHOUT	977.0	1,051.3	1,153.1	1,283.5	1,385.5	1,495.2	1,656.2	1,837.4	2,051.1	2,258.7	2,519.3	2,784.1	3,046.3	3,390.8	3,764.0	4,124.0	4,494.8
WITH	982.4	1,063.5	1,171.2	1,306.7	1,413.2	1,529.1	1,700.3	1,887.2	2,102.5	2,322.1	2,603.5	2,880.5	3,148.3	3,496.8	3,874.2	4,241.7	4,617.5
DIFF	5.4	12.2	18.1	23.2	27.7	33.9	44.1	49.8	51.4	63.4	84.2	96.3	102.0	106.0	110.1	117.7	122.7
%DIFF	0.6	1.2	1.6	1.8	2.0	2.3	2.7	2.7	2.5	2.8	3.3	3.5	3.3	3.1	2.9	2.9	2.7
Gross National Product, 1977 Dollars																	
WITHOUT	1,515.3	1,555.1	1,643.8	1,737.7	1,718.8	1,698.2	1,793.8	1,884.2	1,963.6	2,021.9	2,109.5	2,183.5	2,252.6	2,362.1	2,473.7	2,563.5	2,646.7
WITH	1,522.5	1,568.2	1,658.3	1,748.7	1,724.6	1,702.6	1,799.6	1,886.8	1,959.9	2,023.0	2,118.8	2,189.7	2,250.9	2,351.9	2,457.0	2,543.5	2,622.3
DIFF	7.2	13.1	14.4	11.0	5.8	4.4	5.8	2.5	-3.7	1.1	9.3	6.2	-1.8	-10.2	-16.7	-20.0	-24.5
%DIFF	0.5	0.8	0.9	0.6	0.3	0.3	0.3	0.1	-0.2	0.1	0.4	0.3	-0.1	-0.4	-0.7	-0.8	-0.9
Implicit GNP Deflator, 1977=1.00																	
WITHOUT	0.645	0.676	0.701	0.739	0.806	0.880	0.923	0.975	1.044	1.117	1.194	1.275	1.352	1.435	1.521	1.609	1.698
WITH	0.645	0.678	0.706	0.747	0.820	0.898	0.945	1.000	1.072	1.148	1.228	1.315	1.398	1.486	1.577	1.667	1.761
DIFF	0.000	0.002	0.005	0.009	0.013	0.018	0.022	0.025	0.028	0.031	0.034	0.040	0.046	0.051	0.055	0.059	0.063
%DIFF	0.1	0.3	0.7	1.2	1.7	2.0	2.3	2.6	2.7	2.7	2.9	3.2	3.4	3.6	3.6	3.7	3.7
Consumer Price Index,1977=1.00																	
WITHOUT	0.640	0.666	0.686	0.726	0.802	0.872	0.919	0.976	1.048	1.121	1.197	1.276	1.353	1.433	1.517	1.604	1.694
WITH	0.641	0.668	0.690	0.733	0.814	0.888	0.939	1.000	1.075	1.151	1.230	1.314	1.397	1.482	1.570	1.661	1.756
DIFF	0.000	0.002	0.004	0.007	0.011	0.016	0.020	0.024	0.027	0.030	0.033	0.039	0.044	0.049	0.054	0.058	0.062
%DIFF	0.1	0.2	0.5	1.0	1.4	1.8	2.2	2.4	2.6	2.7	2.8	3.0	3.3	3.4	3.5	3.6	3.6
Wholesale Price Index,1977=1.00																	
WITHOUT	0.568	0.585	0.608	0.683	0.807	0.877	0.914	0.967	1.036	1.102	1.178	1.254	1.318	1.394	1.479	1.567	1.657
WITH	0.568	0.587	0.613	0.693	0.824	0.900	0.942	1.000	1.073	1.142	1.222	1.304	1.373	1.453	1.541	1.632	1.726
DIFF	0.000	0.002	0.005	0.011	0.018	0.024	0.028	0.033	0.036	0.040	0.044	0.050	0.054	0.058	0.062	0.065	0.069
%DIFF	0.1	0.4	0.9	1.6	2.2	2.7	3.1	3.4	3.5	3.6	3.7	4.0	4.1	4.2	4.2	4.2	4.2
Unemployment Rate, Percent																	
WITHOUT	5.2	6.3	6.0	5.2	5.8	8.6	7.9	7.2	6.2	6.4	6.4	6.2	6.4	6.0	5.4	5.2	5.2
WITH	5.0	5.9	5.6	4.8	5.6	8.5	7.7	7.0	6.1	6.3	6.0	5.7	6.1	5.7	5.2	5.0	5.0
DIFF	-0.2	-0.3	-0.4	-0.3	-0.2	-0.2	-0.2	-0.2	-0.1	-0.2	-0.4	-0.4	-0.3	-0.2	-0.2	-0.2	-0.2
%DIFF	-3.5	-5.5	-6.3	-5.9	-3.3	-1.8	-2.5	-2.7	-1.7	-2.8	-6.3	-7.1	-5.3	-4.2	-3.9	-4.4	-4.6
Gross Fixed Private Nonresidential Investment, 1977 Dollars																	
WITHOUT	158.1	151.6	161.5	182.6	185.0	163.5	173.1	190.1	207.5	215.3	227.0	240.3	246.3	257.6	273.4	290.3	305.6
WITH	161.4	158.4	171.4	192.2	191.6	166.7	174.5	190.4	205.0	214.3	229.0	242.3	246.7	256.7	270.9	285.2	298.1
DIFF	3.3	6.8	9.9	9.6	6.6	3.2	1.4	0.3	-2.4	-1.0	2.0	2.0	0.4	-0.9	-2.5	-5.1	-7.5
%DIFF	2.1	4.5	6.1	5.3	3.6	1.9	0.8	0.2	-1.2	-0.5	0.9	0.8	0.2	-0.3	-0.9	-1.8	-2.5
Fixed Investment in Producers' Durable Equipment, 1977 Dollars																	
WITHOUT	92.4	88.7	97.6	113.3	118.4	103.7	110.7	124.3	135.0	139.9	148.6	157.9	163.1	171.5	182.6	194.7	205.9
WITH	94.7	93.4	104.7	120.6	124.2	107.9	113.6	126.6	135.4	141.7	152.3	161.2	165.4	173.1	183.2	193.4	202.8
DIFF	2.4	4.7	7.1	7.3	5.8	4.2	2.9	2.2	0.3	1.8	3.7	3.4	2.3	1.5	0.5	-1.4	-3.1
%DIFF	2.6	5.3	7.3	6.5	4.9	4.0	2.6	1.8	0.3	1.3	2.5	2.1	1.4	0.9	0.3	-0.7	-1.5

TABLE 2 (continued)
Estimated Impact of Pollution Control Expenditures on the Economy -- 1970-1986

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Fixed Investment in Nonresidential Structures, 1977 Dollars																	
WITHOUT	67.4	64.5	65.1	70.4	67.3	60.5	63.0	66.0	72.9	75.8	78.6	82.6	83.3	86.0	90.6	95.3	99.3
WITH	68.3	66.6	67.8	72.5	67.9	59.2	61.2	63.8	69.8	72.6	76.6	81.0	81.2	83.3	87.3	91.3	94.7
DIFF	0.9	2.1	2.7	2.1	0.6	-1.3	-1.8	-2.1	-3.1	-3.2	-2.0	-1.6	-2.1	-2.7	-3.3	-4.0	-4.6
%DIFF	1.3	3.2	4.1	3.0	0.9	-2.1	-2.9	-3.2	-4.2	-4.2	-2.5	-2.0	-2.5	-3.2	-3.7	-4.2	-4.6
Housing Starts, Millions of Units																	
WITHOUT	1.433	2.063	2.429	2.123	1.376	1.178	1	2.027	1.973	1.787	2.035	1.943	1.988	2.239	2.285	2.237	2.186
WITH	1.435	2.036	2.361	2.045	1.334	1.161	1	1.966	1.922	1.774	2.011	1.894	1.921	2.167	2.202	2.146	2.083
DIFF	0.002	-0.027	-0.068	-0.079	-0.043	-0.017	-0.020	-0.061	-0.051	-0.013	-0.024	-0.049	-0.066	-0.072	-0.083	-0.091	-0.102
%DIFF	0.1	-1.3	-2.8	-3.7	-3.1	-1.5	-1.3	-3.0	-2.6	-0.7	-1.2	-2.5	-3.3	-3.2	-3.6	-4.1	-4.7
Percentage Growth Rate of GNP, 1977 Dollars																	
WITHOUT	-0.8	2.6	5.7	5.7	-1.1	-1.2	5.6	5.0	4.2	3.0	4.3	3.5	3.2	4.9	4.7	3.6	3.2
WITH	-0.3	3.0	5.7	5.5	-1.4	-1.3	5.7	4.8	3.9	3.2	4.7	3.3	2.8	4.5	4.5	3.5	3.1
DIFF	0.5	0.4	0.0	-0.3	-0.3	-0.1	0.1	-0.2	-0.3	0.3	0.4	-0.2	-0.4	-0.4	-0.3	-0.1	-0.2
%DIFF	-59.0	14.1	0.7	-4.4	27.1	6.2	1.2	-3.9	-8.0	8.6	9.3	-4.7	-11.8	-7.6	-5.4	-3.0	-4.7
Percentage Growth Rate of CPIU																	
WITHOUT	5.8	4.1	3.0	5.8	10.5	8.7	5.4	6.2	7.3	7.0	6.8	6.6	6.0	5.9	5.8	5.8	5.7
WITH	5.9	4.3	3.3	6.2	11.0	9.1	5.8	6.5	7.5	7.1	6.9	6.8	6.3	6.1	5.9	5.8	5.7
DIFF	0.1	0.2	0.3	0.5	0.5	0.4	0.4	0.3	0.2	0.1	0.1	0.3	0.3	0.2	0.1	0.1	0.1
%DIFF	1.2	4.6	10.0	8.1	4.6	5.0	6.7	4.0	2.3	1.2	1.7	4.1	4.4	2.5	1.7	1.2	0.9
Imports, 1977 Dollars																	
WITHOUT	137.1	141.2	155.3	162.5	157.2	137.5	164.0	180.8	199.9	205.4	215.2	226.2	233.1	245.8	262.4	278.3	292.9
WITH	138.2	144.1	159.8	167.9	162.2	142.0	169.3	186.6	204.8	210.3	221.6	233.2	239.3	251.2	267.0	282.1	295.6
DIFF	1.1	2.9	4.5	5.4	5.0	4.5	5.4	5.8	4.9	5.0	6.4	7.0	6.2	5.4	4.6	3.8	2.7
%DIFF	0.8	2.0	2.9	3.3	3.2	3.3	3.3	3.2	2.5	2.4	3.0	3.1	2.7	2.2	1.7	1.4	0.9
Exports, 1977 Dollars																	
WITHOUT	119.8	121.1	129.5	156.0	166.2	161.0	171.6	175.7	189.6	200.6	210.7	222.6	233.0	244.1	255.8	267.9	280.4
WITH	119.9	121.3	129.9	156.2	166.2	160.9	171.4	175.5	189.0	199.9	210.2	222.0	232.1	242.7	254.0	265.9	278.1
DIFF	0.1	0.3	0.3	0.2	0.0	-0.2	-0.2	-0.2	-0.6	-0.7	-0.6	-0.6	-1.0	-1.4	-1.8	-2.0	-2.3
%DIFF	0.1	0.2	0.3	0.1	0.0	-0.1	-0.1	-0.1	-0.3	-0.4	-0.3	-0.3	-0.4	-0.6	-0.7	-0.8	-0.8
Consumption of Autos and Parts, 1977 Dollars																	
WITHOUT	50.2	59.5	69.1	75.6	62.3	63.1	76.0	83.9	88.4	87.5	92.7	94.9	99.2	107.8	115.0	120.6	124.3
WITH	50.4	59.8	68.6	74.1	60.2	60.8	73.7	81.5	85.3	84.9	90.4	91.4	94.0	101.6	108.6	114.4	118.0
DIFF	0.2	0.2	-0.5	-1.4	-2.1	-2.3	-2.3	-2.4	-3.0	-2.6	-2.2	-3.5	-5.1	-6.2	-6.4	-6.2	-6.3
%DIFF	0.4	0.4	-0.7	-1.9	-3.4	-3.7	-3.0	-2.9	-3.4	-3.0	-2.4	-3.7	-5.2	-5.7	-5.5	-5.1	-5.1
Consumption of Other Durables, 1977 Dollars																	
WITHOUT	17.9	17.7	19.8	21.6	21.8	22.6	23.5	25.4	27.3	28.4	30.2	31.8	33.3	35.8	38.6	41.2	43.9
WITH	17.9	18.0	20.1	21.9	22.1	22.8	23.7	25.6	27.4	28.5	30.4	32.0	33.4	35.8	38.5	41.2	43.8
DIFF	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.0	0.0	0.2	0.2	0.1	0.0	-0.1	-0.1	-0.1
%DIFF	0.6	1.4	1.5	1.3	1.1	1.0	1.0	0.6	0.1	0.2	0.6	0.6	0.3	0.0	-0.2	-0.1	-0.2

TABLE 2 (continued)
Estimated Impact of Pollution Control Expenditures
on the Economy -- 1970-1986

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Consumption of Nondurables, 1977 Dollars																	
WITHOUT	408.0	413.4	429.3	442.9	435.4	439.4	457.9	472.5	483.2	500.4	520.2	538.3	559.1	583.3	606.9	625.1	641.0
WITH	409.8	416.7	434.0	448.4	440.5	444.5	464.2	478.9	488.4	506.1	527.0	544.5	563.3	584.7	606.3	624.0	639.0
DIFF	1.9	3.3	4.7	5.6	5.1	5.1	6.3	6.4	5.3	5.7	6.9	6.2	4.3	1.4	-0.5	-1.1	-2.0
%DIFF	0.5	0.8	1.1	1.3	1.2	1.2	1.4	1.4	1.1	1.1	1.3	1.2	0.8	0.2	-0.1	-0.2	-0.3
Consumption of Services, 1977 Dollars																	
WITHOUT	417.6	429.3	451.7	471.7	483.3	499.0	523.5	546.8	573.3	595.9	618.3	640.5	663.9	691.9	722.5	750.6	776.7
WITH	419.0	431.8	454.5	474.5	485.4	500.8	526.0	549.0	574.3	596.9	620.7	642.8	665.1	691.5	720.8	748.5	773.9
DIFF	1.5	2.5	2.8	2.7	2.1	1.8	2.5	2.2	1.1	1.0	2.5	2.3	1.3	-0.5	-1.7	-2.1	-2.8
%DIFF	0.4	0.6	0.6	0.6	0.4	0.4	0.5	0.4	0.2	0.2	0.4	0.4	0.2	-0.1	-0.2	-0.3	-0.4
Disposable Personal Income, Current Dollars																	
WITHOUT	683.0	735.8	790.2	886.3	964.9	1,062.4	1,154.7	1,270.1	1,417.8	1,568.6	1,746.0	1,921.3	2,106.8	2,334.9	2,580.5	2,824.7	3,079.2
WITH	686.0	742.8	801.3	901.7	984.8	1,086.8	1,184.4	1,303.0	1,452.0	1,608.8	1,795.9	1,979.0	2,171.2	2,403.5	2,651.7	2,901.0	3,160.2
DIFF	3.0	7.0	11.1	15.4	19.9	24.4	29.8	32.9	34.3	40.2	49.9	57.6	64.3	68.6	71.2	76.4	81.0
%DIFF	0.4	1.0	1.4	1.7	2.1	2.3	2.6	2.6	2.4	2.6	2.9	3.0	3.1	2.9	2.8	2.7	2.6
Disposable Personal Income, 1977 Dollars																	
WITHOUT	1,039.0	1,074.8	1,118.0	1,193.9	1,178.1	1,204.4	1,247.9	1,301.7	1,361.9	1,414.2	1,476.9	1,529.8	1,586.0	1,663.0	1,740.6	1,806.1	1,868.8
WITH	1,042.9	1,082.0	1,127.1	1,202.0	1,184.4	1,209.3	1,252.0	1,302.7	1,358.4	1,411.7	1,476.7	1,527.4	1,580.3	1,652.7	1,725.1	1,787.8	1,847.6
DIFF	3.8	7.3	9.1	8.1	6.3	4.9	4.1	1.0	-3.4	-2.5	-0.3	-2.4	-5.7	-10.3	-15.5	-18.3	-21.3
%DIFF	0.4	0.7	0.8	0.7	0.5	0.4	0.3	0.1	-0.3	-0.2	0.0	-0.2	-0.4	-0.6	-0.9	-1.0	-1.1
Corporate Profits Before Taxes, Current Dollars																	
WITHOUT	70.9	80.4	94.6	114.8	127.4	121.1	155.5	172.8	192.7	200.5	226.8	240.4	256.3	297.2	336.4	366.8	395.5
WITH	71.5	82.0	96.2	115.8	127.0	120.4	155.9	173.8	193.5	204.0	236.1	250.6	263.3	302.8	342.8	373.8	402.3
DIFF	0.6	1.6	1.6	1.0	-0.4	-0.7	0.4	1.0	0.8	3.5	9.3	10.2	7.0	5.6	6.4	7.0	6.7
%DIFF	0.8	2.0	1.7	0.8	-0.3	-0.6	0.3	0.6	0.4	1.8	4.1	4.2	2.7	1.9	1.9	1.9	1.7
Corporate Profits After Taxes, Current Dollars																	
WITHOUT	36.7	43.4	53.7	66.5	74.9	70.9	91.4	101.5	112.6	121.4	137.2	145.7	155.8	181.2	205.9	225.3	243.9
WITH	37.0	44.3	54.6	67.1	74.6	70.5	91.7	102.1	113.0	123.5	142.8	151.9	160.0	184.7	209.8	229.6	248.1
DIFF	0.3	0.8	0.9	0.6	-0.3	-0.4	0.3	0.6	0.5	2.1	5.6	6.2	4.3	3.4	3.9	4.3	4.2
%DIFF	0.8	2.0	1.7	0.8	-0.3	-0.6	0.3	0.6	0.4	1.8	4.1	4.2	2.7	1.9	1.9	1.9	1.7
Corporate Profits After Taxes, 1977 Dollars																	
WITHOUT	57.5	65.0	78.0	93.0	94.6	80.4	98.9	103.9	107.5	108.5	115.0	114.8	115.9	127.0	135.9	140.4	143.7
WITH	58.0	66.1	78.7	92.5	92.6	78.3	97.0	102.1	105.3	107.8	116.8	116.5	115.7	125.8	134.7	139.3	142.5
DIFF	0.4	1.1	0.7	-0.4	-2.0	-2.0	-1.9	-1.9	-2.2	-0.7	1.8	1.7	-0.2	-1.2	-1.2	-1.1	-1.3
%DIFF	0.7	1.6	0.9	-0.5	-2.1	-2.5	-2.0	-1.8	-2.0	-0.7	1.5	1.5	-0.2	-1.0	-0.9	-0.8	-0.9
AA Corporate Bond Rate for New Issues																	
WITHOUT	8.43	7.12	6.78	7.12	8.40	8.51	7.80	7.58	8.53	8.74	9.13	9.33	8.83	8.62	8.41	8.32	8.22
WITH	8.50	7.36	7.16	7.65	8.97	9.02	8.34	8.06	8.92	9.00	9.43	9.74	9.31	9.02	8.79	8.57	8.36
DIFF	0.07	0.24	0.39	0.54	0.57	0.51	0.53	0.49	0.39	0.26	0.30	0.41	0.49	0.41	0.38	0.26	0.14
%DIFF	0.8	3.4	5.7	7.5	6.8	6.0	6.8	6.4	4.5	3.0	3.3	4.4	5.5	4.7	4.5	3.1	1.7
Index of Industrial Production, 1977=1.00																	
WITHOUT	0.783	0.792	0.867	0.944	0.948	0.868	0.955	1.010	1.066	1.097	1.156	1.210	1.251	1.338	1.419	1.479	1.539
WITH	0.786	0.799	0.873	0.947	0.944	0.860	0.947	1.000	1.051	1.084	1.151	1.203	1.235	1.313	1.390	1.450	1.506
DIFF	0.003	0.008	0.007	0.003	-0.004	-0.009	-0.008	-0.010	-0.015	-0.013	-0.005	-0.006	-0.016	-0.025	-0.029	-0.029	-0.033
%DIFF	0.4	1.0	0.8	0.3	-0.4	-1.0	-0.8	-1.0	-1.4	-1.2	-0.4	-0.5	-1.3	-1.8	-2.1	-2.0	-2.1

POLICY PERSPECTIVES

Various policy responses could alter the economic impacts discussed in the previous section. An accommodating monetary policy would ease the negative impact associated with the extra financing burden of the pollution-related investment. The government could also use a variety of tools to try to ease the inflationary impact of the regulations. The implications of two sets of strategies are outlined below.

1. Monetary Policy: Hold Interest Rates Unchanged

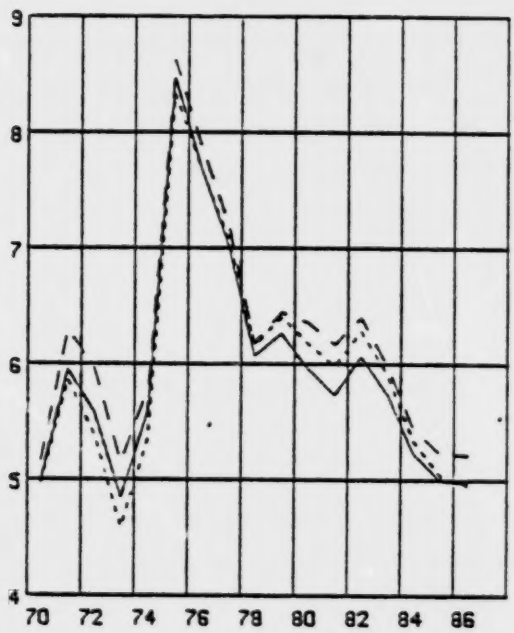
The incremental pollution investment financing requirements created pressures on the financial system, bidding up interest rates. If the Fed had accommodated this action, the negative results for the housing market, business investment, and even consumption would have been eased. DRI was asked to examine the results if Fed policy were eased sufficiently to bring interest rates down to their level in the "without" case.

A simulation was prepared to analyze this. Economic activity first shows up significantly stronger than in the "with" case. Housing shows the quickest response, rising to 4.9% higher than in the "with" case by 1973. Real business fixed investment improves by 3.0% in 1975 and real consumer outlays rise by 0.6%. However, a price must be paid for the benefits derived from this extra activity. The inflation induced by the pollution requirements is exacerbated, and consumer prices rise another 0.8% higher by 1976.

An interesting cyclical pattern is set in motion by the easier policy. The higher inflation combined with the stronger activity early on bring about a correction later, and real GNP falls below the "with" case by about 1979. Easing demands then close the inflation differential from the 0.8% gap which had developed, and eventually bring price levels below the "with" case. Prices still end up 3% higher than in the base "without" path. These results are summarized in Table 3.

Chart 17
Impact of Accommodating Policy
Holding Interest Rates Unchanged

The Unemployment Rate (%)



—with
...with, plus accommodating policy
—without

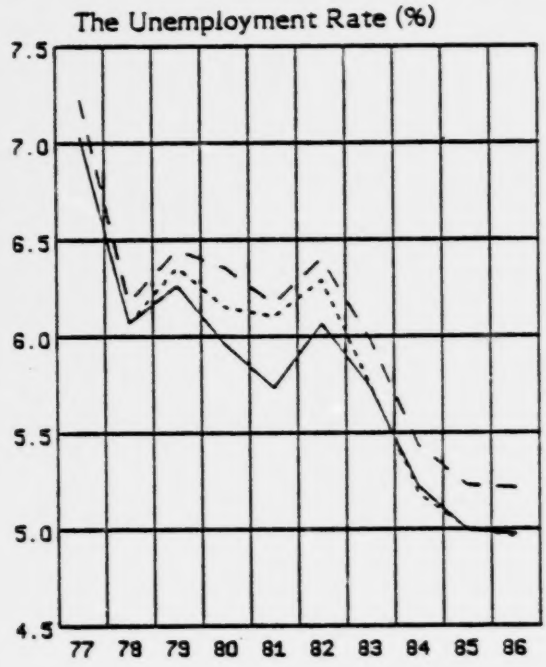
2. Mitigating the Impact on Inflation

The new reality of the 1970s has produced a phenomenon called stagflation—inflation in combination with growth inadequate to employ fully the labor force.[1] The phenomenon was generally recognized in 1970, when recession did not bring relief from the Vietnam War inflation. Subsequent efforts through price controls, stimulating fiscal and monetary policies, manpower programs, and other approaches have not succeeded in bringing it to an end. In this environment, the ability of the government to reduce inflation without inflicting a major cost on the employment front is clearly limited. However, in an effort to analyze the nature of the trade-offs, a simulation was developed where the Federal government relied upon a combination of demand management tools to bring down inflation.

[1] A complete analysis of this issue is presented in "Stagflation: Is There a Way Out?", in The Great Recession, Otto Eckstein, North Holland Publishing Company, 1978.

Monetary and fiscal policy have differing impacts on different sectors of the economy. Thus a different combination of monetary and fiscal policy actions would affect the economy in different ways. A mechanical means of selecting the appropriate combination of policies to minimize the negative impact on selected variables has been developed by DRI.[1] A solution was developed beginning in 1979 which would bring the inflation rate down to the case which had no pollution spending. (No attempt was made to bring the higher price level at the start down to the base.) The combination of policy tools which would do this with the minimum change to the unemployment rate was selected. Some weight was also given to minimizing the change to the capital stock as well.

Chart 18
Impact of Policy Initiatives
To Bring Inflation Down to "Without" Rates



—with
...with, plus inflation-reduction policies
—without

[1]Details of the optimal control procedure will be provided in the technical appendix.

The solution result shows the price to be paid for reducing the inflation impact. Government outlays must be cut back and monetary policy tightened. Housing starts in particular are crunched, falling to 5.7% below the unadjusted "with" result in 1981. Real GNP is lower by 1.2%, and the unemployment rate is 0.4 point higher. This sharp restriction early on corrects for the extra inflation, and subsequently the real GNP path begins to converge back to its old answer. The results are summarized in Table 4.

SENSITIVITY ANALYSIS

The economic analysis presented in this report relied on estimates of the expected incremental costs associated with the Federal air and water standards over the 1978 to 1986 period. Since these estimates could be off for a variety of reasons, two supplemental cases were developed to analyze the impact of either much higher required outlays or a sharp drop in requirements. In both cases, only the industry investment assumptions were changed, with the government and mobile source specifications left the same as in the original analysis.

Case 1: Higher Investment Requirements

The implications of a higher path for projected pollution abatement outlays were first examined. The investment assumptions spelled out in Table 1 were raised by 2% in 1977 and 2% more each year thereafter, reaching a 20% increment in 1985. The analysis was extended out to the year 1990, with the pollution-related outlays held at 20% above their level in the original estimates.

The 20% addition results in pollution-related outlays of $8.0 billion by 1986. The incremental investment and accompanying employment gains materialize quickly, pushing the real GNP results above the case with smaller assumptions and lowering the unemployment rate. The additional inflation takes longer to work its way through the system, but by the end of the period it is acting to bring down the positive GNP results. By 1990, the consumer price index rises to 0.4% above the case with lower assumptions and 4.2% above the case which assumes no pollution-related spending. The results are summarized in Table 6.

Case 2: A Drop-Off in Outlays

A second sensitivity analysis was run analyzing the impact of a gradual tapering off of pollution abatement investment. Incremental investment was phased out to zero over the period from 1979 to 1983. The removal of the incremental investment quickly shows up in a lower GNP result, particularly because it is imposed on a system with a legacy of higher prices and higher interest rates. Inflation does subside once the spending requirements are lifted, but there is a time lag

Chart 19
Higher Inflation Costs

Consumer Price Index
(Annual Rate of Change)

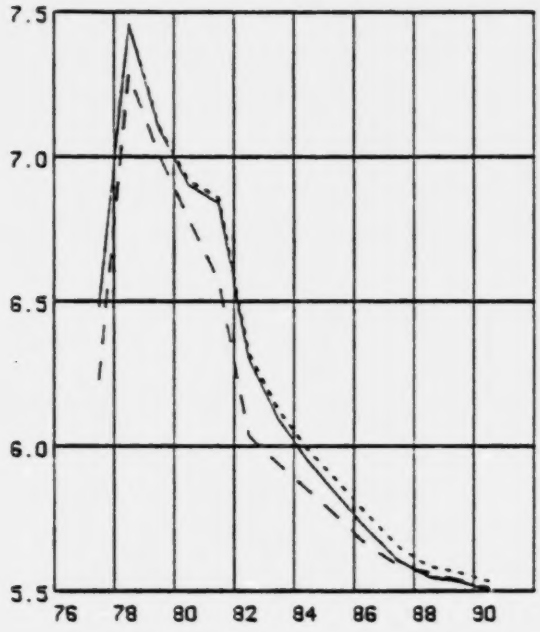


Chart 20
Higher Investment Than In "With,"
But Crowding Out Still Plays a Role

Real Business Fixed Investment
(Billions of 1977 Dollars)

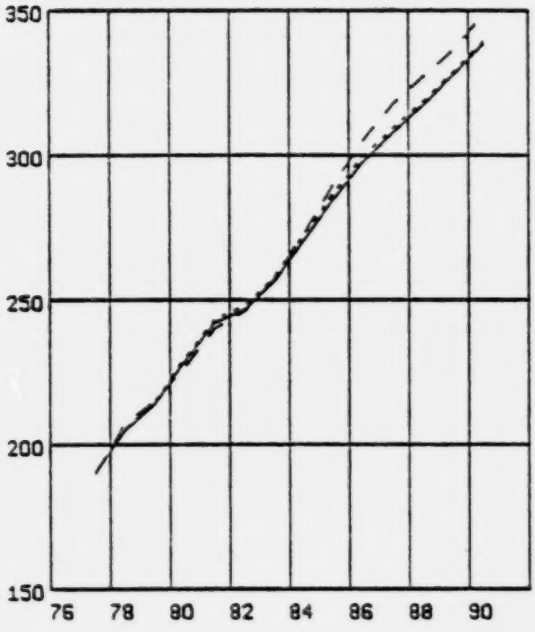
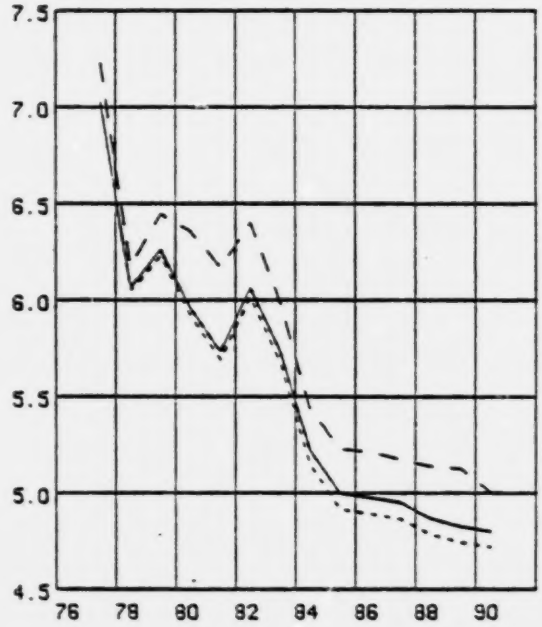


Chart 21
Better Employment Prospects

The Unemployment Rate (%)

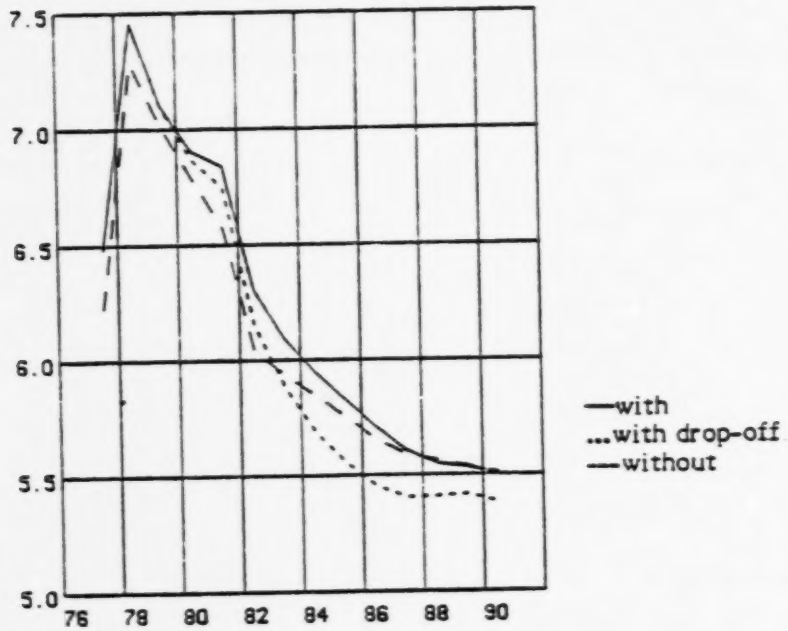


—with pollution abatement expenditures
...with more pollution abatement expenditures
—without pollution abatement expenditures

CASE 2: A DROP-OFF IN POLLUTION ABATEMENT OUTLAYS

Chart 22
Inflation Pressures Ease

Consumer Price Index
(Annual Rate of Change)



*Note that while the drop-off in pollution abatement outlays produces a deceleration in inflation, even below the "without" case, the price level remains well above that in "without."

Chart 23
The Investment Stimulus is Reduced

Real Business Fixed Investment
(Billions of 1977 Dollars)

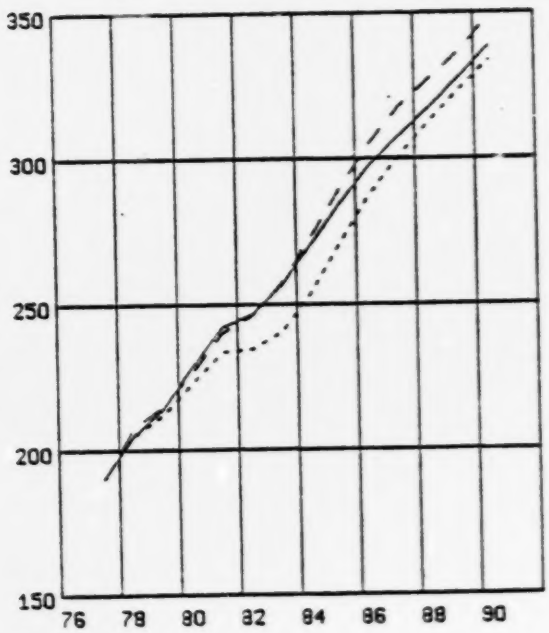
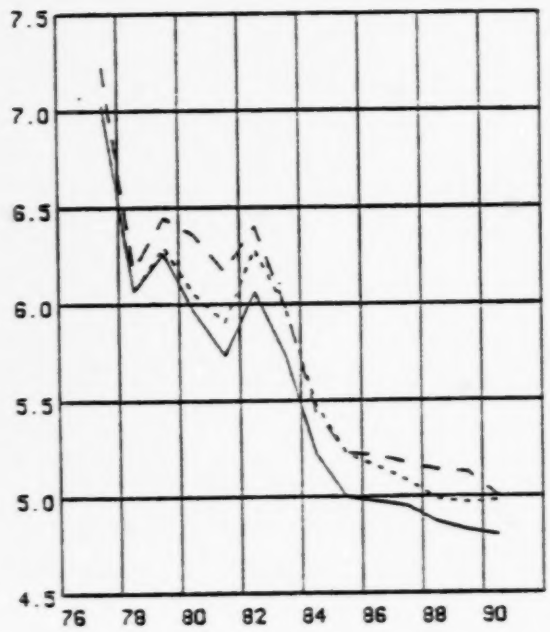


Chart 24
Much Incremental Employment is Lost

The Unemployment Rate (%)



associated with the pass-through of the changing cost picture. The inflation factor never abates completely as operation and maintenance costs end up being reduced by only one-third at the end of the period. In 1990, consumer prices are still 2.0% above the case with no pollution requirements. These results are summarized in Table 7.

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TABLE 3
Impact of Pollution Control Expenditures
Holding the Federal Funds Rate Constant

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Gross National Product, Current Dollars										
WITHOUT	1,837.4	2,051.1	2,258.7	2,519.3	2,784.1	3,046.3	3,390.8	3,764.0	4,124.0	4,494.8
WITH+FF	1,907.7	2,121.6	2,335.8	2,608.1	2,875.3	3,135.1	3,475.5	3,846.7	4,211.3	4,586.7
DIFF	70.3	70.5	77.1	88.8	91.2	88.8	84.7	82.7	87.3	91.9
%DIFF	3.8	3.4	3.4	3.5	3.3	2.9	2.5	2.2	2.1	2.0
Gross National Product, 1977 Dollars										
WITHOUT	1,884.2	1,963.6	2,021.9	2,109.5	2,183.5	2,252.6	2,362.1	2,473.7	2,563.5	2,646.7
WITH+FF	1,887.7	1,959.1	2,018.6	2,109.7	2,178.6	2,240.8	2,343.7	2,452.1	2,543.3	2,627.0
DIFF	3.5	-4.6	-3.3	0.3	-5.0	-11.8	-18.4	-21.6	-20.2	-19.8
%DIFF	0.2	-0.2	-0.2	0.0	-0.2	-0.5	-0.8	-0.9	-0.8	-0.7
Implicit GNP Deflator, 1977=1.00										
WITHOUT	0.975	1.044	1.117	1.194	1.275	1.352	1.435	1.521	1.609	1.698
WITH+FF	1.010	1.083	1.157	1.236	1.320	1.399	1.483	1.568	1.656	1.746
DIFF	0.035	0.038	0.040	0.042	0.045	0.047	0.047	0.047	0.047	0.048
%DIFF	3.6	3.7	3.6	3.5	3.5	3.5	3.3	3.1	2.9	2.8
Consumer Price Index,1977=1.00										
WITHOUT	0.976	1.048	1.121	1.197	1.276	1.353	1.433	1.517	1.604	1.694
WITH+FF	1.008	1.082	1.158	1.236	1.318	1.398	1.479	1.564	1.652	1.744
DIFF	0.031	0.035	0.037	0.039	0.042	0.045	0.047	0.048	0.049	0.050
%DIFF	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.1	3.0	2.9
Wholesale Price Index,1977=1.00										
WITHOUT	0.967	1.036	1.102	1.178	1.254	1.318	1.394	1.479	1.567	1.657
WITH+FF	1.012	1.084	1.151	1.229	1.307	1.372	1.449	1.533	1.622	1.713
DIFF	0.044	0.048	0.049	0.051	0.053	0.054	0.054	0.054	0.055	0.056
%DIFF	4.6	4.6	4.5	4.3	4.2	4.1	3.9	3.6	3.5	3.4
Unemployment Rate, Percent										
WITHOUT	7.2	6.2	6.4	6.4	6.2	6.4	6.0	5.4	5.2	5.2
WITH+FF	7.1	6.2	6.4	6.2	6.0	6.3	5.9	5.3	5.0	5.0
DIFF	-0.1	0.0	0.0	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.3
%DIFF	-1.9	-0.2	-0.6	-2.8	-3.0	-1.8	-1.3	-1.9	-3.6	-5.0
Gross Fixed Private Nonresidential Investment, 1977 Dollars										
WITHOUT	190.1	207.5	215.3	227.0	240.3	246.3	257.6	273.4	290.3	305.6
WITH+FF	193.2	207.6	217.0	230.5	242.4	246.8	257.6	272.9	289.0	303.9
DIFF	3.2	0.1	1.6	3.5	2.2	0.5	0.0	-0.5	-1.3	-1.7
%DIFF	1.7	0.1	0.8	1.6	0.9	0.2	0.0	-0.2	-0.5	-0.6
Fixed Investment in Producers' Durable Equipment, 1977 Dollars										
WITHOUT	124.3	135.0	139.9	148.6	157.9	163.1	171.5	182.6	194.7	205.9
WITH+FF	128.5	137.4	143.9	153.8	161.7	165.8	173.9	184.6	195.8	206.4
DIFF	4.2	2.3	4.0	5.1	3.9	2.7	2.4	2.0	1.1	0.5
%DIFF	3.4	1.7	2.9	3.5	2.5	1.6	1.4	1.1	0.5	0.2

TABLE 3 (continued)
Impact of Pollution Control Expenditures
Holding the Federal Funds Rate Constant

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Fixed Investment in Nonresidential Structures, 1977 Dollars										
WITHOUT	66.0	72.9	75.8	78.6	82.6	83.3	86.0	90.6	95.3	99.3
WITH+FF	64.6	70.4	73.1	76.7	80.6	80.8	83.3	87.8	92.6	96.9
DIFF	-1.3	-2.5	-2.8	-2.0	-2.0	-2.5	-2.7	-2.8	-2.7	-2.5
%DIFF	-2.0	-3.4	-3.6	-2.5	-2.5	-3.0	-3.1	-3.1	-2.8	-2.5
Housing Starts, Millions of Units										
WITHOUT	2.027	1.973	1.787	2.035	1.943	1.988	2.239	2.285	2.237	2.186
WITH+FF	1.966	1.892	1.716	1.967	1.877	1.927	2.167	2.209	2.174	2.131
DIFF	-0.061	-0.082	-0.070	-0.068	-0.066	-0.061	-0.071	-0.076	-0.063	-0.055
%DIFF	-3.0	-4.1	-3.9	-3.3	-3.4	-3.1	-3.2	-3.3	-2.8	-2.5
Percentage Growth Rate of GNP, 1977 Dollars										
WITHOUT	5.0	4.2	3.0	4.3	3.5	3.2	4.9	4.7	3.6	3.2
WITH+FF	4.7	3.8	3.0	4.5	3.3	2.9	4.6	4.6	3.7	3.3
DIFF	-0.3	-0.4	0.1	0.2	-0.2	-0.3	-0.3	-0.1	0.1	0.0
%DIFF	-6.6	-10.3	2.5	4.2	-7.1	-9.7	-5.5	-2.1	2.5	1.3
Percentage Growth Rate of CPIU										
WITHOUT	6.2	7.3	7.0	6.8	6.6	6.0	5.9	5.8	5.8	5.7
WITH+FF	6.5	7.4	7.0	6.7	6.6	6.1	5.8	5.7	5.6	5.6
DIFF	0.3	0.1	0.0	0.0	0.1	0.0	-0.1	-0.1	-0.1	-0.1
%DIFF	4.3	1.6	-0.2	-0.6	0.8	0.3	-1.5	-2.0	-1.9	-1.5
Imports, 1977 Dollars										
WITHOUT	180.8	199.9	205.4	215.2	226.2	233.1	245.8	262.4	278.3	292.9
WITH+FF	186.9	204.5	209.3	219.2	229.6	235.3	246.9	262.7	278.2	292.5
DIFF	6.1	4.6	3.9	4.0	3.3	2.1	1.1	0.3	-0.1	-0.4
%DIFF	3.4	2.3	1.9	1.8	1.5	0.9	0.4	0.1	0.0	-0.1
Exports, 1977 Dollars										
WITHOUT	175.7	189.6	200.6	210.7	222.6	233.0	244.1	255.8	267.9	280.4
WITH+FF	175.4	188.8	199.6	209.8	221.5	231.7	242.5	254.0	266.0	278.6
DIFF	-0.4	-0.8	-1.0	-1.0	-1.1	-1.4	-1.7	-1.9	-1.9	-1.9
%DIFF	-0.2	-0.4	-0.5	-0.5	-0.5	-0.6	-0.7	-0.7	-0.7	-0.7
Consumption of Autos and Parts, 1977 Dollars										
WITHOUT	83.9	88.4	87.5	92.7	94.9	99.2	107.8	115.0	120.6	124.3
WITH+FF	81.3	85.3	84.5	89.5	90.5	93.4	101.3	108.6	114.8	118.5
DIFF	-2.6	-3.0	-3.1	-3.1	-4.4	-5.7	-6.5	-6.4	-5.8	-5.8
%DIFF	-3.1	-3.4	-3.5	-3.4	-4.6	-5.8	-6.0	-5.5	-4.8	-4.7
Consumption of Other Durables, 1977 Dollars										
WITHOUT	25.4	27.3	28.4	30.2	31.8	33.3	35.8	38.6	41.2	43.9
WITH+FF	25.7	27.5	28.4	30.2	31.7	33.1	35.4	38.2	40.9	43.5
DIFF	0.3	0.1	0.0	0.0	-0.1	-0.2	-0.3	-0.4	-0.3	-0.3
%DIFF	1.2	0.5	0.1	0.0	-0.3	-0.7	-1.0	-1.1	-0.8	-0.7

TABLE 3 (continued)
Impact of Pollution Control Expenditures
Holding the Federal Funds Rate Constant

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Consumption of Nondurables, 1977 Dollars										
WITHOUT	472.5	483.2	500.4	520.2	538.3	559.1	583.3	606.9	625.1	641.0
WITH+FF	476.0	484.8	501.4	520.8	537.4	556.0	577.5	599.7	618.1	633.8
DIFF	3.5	1.6	1.0	0.7	-0.8	-3.1	-5.8	-7.2	-7.0	-7.2
%DIFF	0.7	0.3	0.2	0.1	-0.2	-0.5	-1.0	-1.2	-1.1	-1.1
Consumption of Services, 1977 Dollars										
WITHOUT	546.8	573.3	595.9	618.3	640.5	663.9	691.9	722.5	750.6	776.7
WITH+FF	549.8	574.6	596.2	618.6	639.8	661.8	688.2	717.8	746.1	772.2
DIFF	3.0	1.3	0.3	0.4	-0.7	-2.0	-3.8	-4.7	-4.5	-4.5
%DIFF	0.5	0.2	0.1	0.1	-0.1	-0.3	-0.5	-0.6	-0.6	-0.6
Disposable Personal Income, Current Dollars										
WITHOUT	1,270.1	1,417.8	1,568.6	1,746.0	1,921.3	2,106.8	2,334.9	2,580.5	2,824.7	3,079.2
WITH+FF	1,314.1	1,461.2	1,614.2	1,796.3	1,972.8	2,158.5	2,384.3	2,627.0	2,872.7	3,130.1
DIFF	44.0	43.4	45.7	50.3	51.5	51.7	49.4	46.5	48.1	51.0
%DIFF	3.5	3.1	2.9	2.9	2.7	2.5	2.1	1.8	1.7	1.7
Disposable Personal Income, 1977 Dollars										
WITHOUT	1,301.7	1,361.9	1,414.2	1,476.9	1,529.8	1,586.0	1,663.0	1,740.6	1,806.1	1,868.8
WITH+FF	1,303.4	1,357.0	1,407.5	1,470.0	1,518.9	1,571.2	1,643.6	1,717.2	1,782.1	1,844.7
DIFF	1.7	-4.8	-6.7	-7.0	-10.9	-14.8	-19.4	-23.4	-24.0	-24.1
%DIFF	0.1	-0.4	-0.5	-0.5	-0.7	-0.9	-1.2	-1.3	-1.3	-1.3
Corporate Profits Before Taxes, Current Dollars										
WITHOUT	172.8	192.7	200.5	226.8	240.4	256.3	297.2	336.4	366.8	395.5
WITH+FF	173.4	192.2	200.9	230.3	243.3	256.7	296.7	337.5	369.9	399.4
DIFF	0.5	-0.6	0.4	3.5	2.9	0.4	-0.5	1.1	3.1	3.9
%DIFF	0.3	-0.3	0.2	1.5	1.2	0.2	-0.2	0.3	0.8	1.0
Corporate Profits After Taxes, Current Dollars										
WITHOUT	101.5	112.6	121.4	137.2	145.7	155.8	181.2	205.9	225.3	243.9
WITH+FF	101.8	112.2	121.6	139.3	147.5	156.0	180.9	206.6	227.2	246.3
DIFF	0.3	-0.3	0.3	2.1	1.8	0.2	-0.3	0.7	1.9	2.4
%DIFF	0.3	-0.3	0.2	1.5	1.2	0.2	-0.2	0.3	0.8	1.0
Corporate Profits After Taxes, 1977 Dollars										
WITHOUT	103.9	107.5	108.5	115.0	114.8	115.9	127.0	135.9	140.4	143.7
WITH+FF	100.6	103.5	105.3	113.3	113.0	113.1	124.0	133.8	139.4	143.2
DIFF	-3.3	-4.0	-3.2	-1.7	-1.8	-2.8	-3.0	-2.1	-1.0	-0.6
%DIFF	-3.2	-3.7	-2.9	-1.4	-1.6	-2.4	-2.4	-1.5	-0.7	-0.4
AA Corporate Bond Rate for New Issues										
WITHOUT	7.58	8.53	8.74	9.13	9.33	8.83	8.62	8.41	8.32	8.22
WITH+FF	8.07	8.89	8.94	9.19	9.45	8.97	8.64	8.41	8.22	8.04
DIFF	0.50	0.36	0.20	0.06	0.13	0.14	0.02	0.00	-0.10	-0.18
%DIFF	6.5	4.3	2.2	0.7	1.4	1.6	0.2	0.0	-1.2	-2.2
Index of Industrial Production, 1977=1.00										
WITHOUT	1.010	1.066	1.097	1.156	1.210	1.251	1.338	1.419	1.479	1.539
WITH+FF	1.002	1.052	1.082	1.145	1.195	1.229	1.310	1.391	1.456	1.517
DIFF	-0.008	-0.014	-0.015	-0.011	-0.015	-0.022	-0.028	-0.029	-0.024	-0.022
%DIFF	-0.8	-1.3	-1.4	-1.0	-1.2	-1.8	-2.1	-2.0	-1.6	-1.4

TABLE 4
Impact of Pollution Control Expenditures
Attempting to Hold Inflation Unchanged
Beginning in 1979

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Gross National Product, Current Dollars										
WITHOUT	1,837.4	2,051.1	2,258.7	2,519.3	2,784.1	3,046.3	3,390.8	3,764.0	4,124.0	4,494.8
WITH+PGNP	1,887.2	2,102.5	2,312.9	2,579.3	2,834.7	3,107.8	3,463.1	3,837.6	4,198.1	4,574.7
DIFF	49.8	51.4	54.2	60.0	50.6	61.5	72.3	73.6	74.1	79.9
%DIFF	2.7	2.5	2.4	2.4	1.8	2.0	2.1	2.0	1.8	1.8
Gross National Product, 1977 Dollars										
WITHOUT	1,884.2	1,963.6	2,021.9	2,109.5	2,183.5	2,252.6	2,362.1	2,473.7	2,563.5	2,646.7
WITH+PGNP	1,886.8	1,959.9	2,015.2	2,101.9	2,163.5	2,236.4	2,347.9	2,454.5	2,539.4	2,621.2
DIFF	2.5	-3.7	-6.6	-7.5	-20.0	-16.2	-14.2	-19.2	-24.1	-25.5
%DIFF	0.1	-0.2	-0.3	-0.4	-0.9	-0.7	-0.6	-0.8	-0.9	-1.0
Implicit GNP Deflator, 1977=1.00										
WITHOUT	0.975	1.044	1.117	1.194	1.275	1.352	1.435	1.521	1.609	1.698
WITH+PGNP	1.000	1.072	1.148	1.227	1.310	1.389	1.475	1.563	1.653	1.745
DIFF	0.025	0.028	0.031	0.033	0.035	0.037	0.039	0.042	0.044	0.047
%DIFF	2.6	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Consumer Price Index,1977=1.00										
WITHOUT	0.976	1.048	1.121	1.197	1.276	1.353	1.433	1.517	1.604	1.694
WITH+PGNP	1.000	1.075	1.151	1.229	1.311	1.391	1.474	1.560	1.651	1.744
DIFF	0.024	0.027	0.030	0.032	0.036	0.039	0.041	0.044	0.047	0.050
%DIFF	2.4	2.6	2.6	2.7	2.8	2.9	2.8	2.9	2.9	2.9
Wholesale Price Index,1977=1.00										
WITHOUT	0.967	1.036	1.102	1.178	1.254	1.318	1.394	1.479	1.567	1.657
WITH+PGNP	1.000	1.073	1.142	1.220	1.297	1.363	1.442	1.531	1.620	1.713
DIFF	0.033	0.036	0.040	0.042	0.043	0.045	0.048	0.051	0.053	0.056
%DIFF	3.4	3.5	3.6	3.6	3.4	3.4	3.4	3.4	3.4	3.4
Unemployment Rate, Percent										
WITHOUT	7.2	6.2	6.4	6.4	6.2	6.4	6.0	5.4	5.2	5.2
WITH+PGNP	7.0	6.1	6.4	6.1	6.1	6.3	5.7	5.2	5.0	5.0
DIFF	-0.2	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2	-0.3	-0.2	-0.3
%DIFF	-2.7	-1.7	-1.4	-3.2	-1.1	-1.7	-4.0	-4.6	-4.3	-4.9
Gross Fixed Private Nonresidential Investment, 1977 Dollars										
WITHOUT	190.1	207.5	215.3	227.0	240.3	246.3	257.6	273.4	290.3	305.6
WITH+PGNP	190.4	205.0	214.1	227.9	238.0	242.0	255.1	271.1	285.6	298.7
DIFF	0.3	-2.4	-1.2	1.0	-2.3	-4.3	-2.5	-2.3	-4.7	-6.9
%DIFF	0.2	-1.2	-0.6	0.4	-0.9	-1.7	-1.0	-0.8	-1.6	-2.3
Fixed Investment in Producers' Durable Equipment, 1977 Dollars										
WITHOUT	124.3	135.0	139.9	148.6	157.9	163.1	171.5	182.6	194.7	205.9
WITH+PGNP	126.5	135.4	141.5	151.6	158.4	162.3	171.9	183.0	193.2	202.7
DIFF	2.2	0.3	1.7	2.9	0.6	-0.8	0.3	0.3	-1.6	-3.2
%DIFF	1.8	0.3	1.2	2.0	0.4	-0.5	0.2	0.2	-0.8	-1.6

TABLE 4 (continued)
Impact of Pollution Control Expenditures
Attempting to Hold Inflation Unchanged
Beginning in 1979

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Fixed Investment in Nonresidential Structures, 1977 Dollars										
WITHOUT	66.0	72.9	75.8	78.6	82.6	83.3	86.0	90.6	95.3	99.3
WITH+PGNP	63.8	69.8	72.6	76.3	79.5	79.5	82.8	87.7	92.0	95.5
DIFF	-2.1	-3.1	-3.2	-2.3	-3.1	-3.7	-3.1	-2.9	-3.3	-3.9
%DIFF	-3.2	-4.2	-4.2	-2.9	-3.8	-4.5	-3.6	-3.2	-3.5	-3.9
Housing Starts, Millions of Units										
WITHOUT	2.027	1.973	1.787	2.035	1.943	1.988	2.239	2.285	2.237	2.186
WITH+PGNP	1.966	1.922	1.812	1.932	1.787	1.925	2.196	2.185	2.114	2.089
DIFF	-0.061	-0.051	0.025	-0.103	-0.156	-0.063	-0.042	-0.100	-0.123	-0.097
%DIFF	-3.0	-2.6	1.4	-5.1	-8.0	-3.1	-1.9	-4.4	-5.5	-4.4
Percentage Growth Rate of GNP, 1977 Dollars										
WITHOUT	5.0	4.2	3.0	4.3	3.5	3.2	4.9	4.7	3.6	3.2
WITH+PGNP	4.8	3.9	2.8	4.3	2.9	3.4	5.0	4.5	3.5	3.2
DIFF	-0.2	-0.3	-0.1	0.0	-0.6	0.2	0.1	-0.2	-0.2	0.0
%DIFF	-3.9	-8.0	-4.8	-0.7	-16.6	6.5	2.5	-3.9	-4.6	-0.8
Percentage Growth Rate of CPIU										
WITHOUT	6.2	7.3	7.0	6.8	6.6	6.0	5.9	5.8	5.8	5.7
WITH+PGNP	6.5	7.5	7.1	6.8	6.7	6.1	5.9	5.9	5.8	5.7
DIFF	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
%DIFF	4.0	2.3	1.0	0.8	1.7	0.9	-0.2	0.4	0.8	0.5
Imports, 1977 Dollars										
WITHOUT	180.8	199.9	205.4	215.2	226.2	233.1	245.8	262.4	278.3	292.9
WITH+PGNP	186.6	204.8	209.7	220.1	229.3	235.3	249.0	265.7	280.6	294.4
DIFF	5.8	4.9	4.3	4.9	3.1	2.2	3.2	3.3	2.3	1.5
%DIFF	3.2	2.5	2.1	2.3	1.4	0.9	1.3	1.3	0.8	0.5
Exports, 1977 Dollars										
WITHOUT	175.7	189.6	200.6	210.7	222.6	233.0	244.1	255.8	267.9	280.4
WITH+PGNP	175.5	189.0	199.8	209.8	221.2	231.5	242.6	254.2	266.0	278.3
DIFF	-0.2	-0.6	-0.9	-0.9	-1.3	-1.6	-1.5	-1.6	-1.9	-2.1
%DIFF	-0.1	-0.3	-0.4	-0.4	-0.6	-0.7	-0.6	-0.6	-0.7	-0.7
Consumption of Autos and Parts, 1977 Dollars										
WITHOUT	83.9	88.4	87.5	92.7	94.9	99.2	107.8	115.0	120.6	124.3
WITH+PGNP	81.5	85.3	84.9	89.1	89.4	94.0	102.3	108.7	113.8	117.7
DIFF	-2.4	-3.0	-2.7	-3.5	-5.5	-5.2	-5.5	-6.3	-6.8	-6.6
%DIFF	-2.9	-3.4	-3.1	-3.8	-5.7	-5.2	-5.1	-5.5	-5.6	-5.3
Consumption of Other Durables, 1977 Dollars										
WITHOUT	25.4	27.3	28.4	30.2	31.8	33.3	35.8	38.6	41.2	43.9
WITH+PGNP	25.6	27.4	28.4	30.1	31.6	33.1	35.6	38.4	41.0	43.7
DIFF	0.2	0.0	0.0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1
%DIFF	0.6	0.1	-0.2	-0.2	-0.8	-0.6	-0.5	-0.6	-0.4	-0.3

TABLE 4 (continued)
Impact of Pollution Control Expenditures
Attempting to Hold Inflation Unchanged
Beginning in 1979

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Consumption of Nondurables, 1977 Dollars										
WITHOUT	472.5	483.2	500.4	520.2	538.3	559.1	583.3	606.9	625.1	641.0
WITH+PGNP	478.9	488.4	505.0	524.2	540.4	560.7	583.6	605.5	622.7	638.4
DIFF	6.4	5.3	4.6	4.1	2.1	1.6	0.2	-1.4	-2.4	-2.7
%DIFF	1.4	1.1	0.9	0.8	0.4	0.3	0.0	-0.2	-0.4	-0.4
Consumption of Services, 1977 Dollars										
WITHOUT	546.8	573.3	595.9	618.3	640.5	663.9	691.9	722.5	750.6	776.7
WITH+PGNP	549.0	574.3	596.4	618.9	639.1	662.1	689.6	719.2	746.6	772.4
DIFF	2.2	1.1	0.5	0.6	-1.4	-1.7	-2.3	-3.2	-4.0	-4.2
%DIFF	0.4	0.2	0.1	0.1	-0.2	-0.3	-0.3	-0.4	-0.5	-0.5
Disposable Personal Income, Current Dollars										
WITHOUT	1,270.1	1,417.8	1,568.6	1,746.0	1,921.3	2,106.8	2,334.9	2,580.5	2,824.7	3,079.2
WITH+PGNP	1,303.0	1,452.0	1,602.8	1,783.7	1,955.7	2,146.2	2,378.9	2,626.3	2,874.1	3,134.4
DIFF	32.9	34.3	34.2	37.6	34.4	39.4	43.9	45.8	49.5	55.3
%DIFF	2.6	2.4	2.2	2.2	1.8	1.9	1.9	1.8	1.8	1.8
Disposable Personal Income, 1977 Dollars										
WITHOUT	1,301.7	1,361.9	1,414.2	1,476.9	1,529.8	1,586.0	1,663.0	1,740.6	1,806.1	1,868.8
WITH+PGNP	1,302.7	1,358.4	1,406.7	1,467.8	1,513.2	1,569.8	1,646.3	1,720.5	1,783.9	1,846.1
DIFF	1.0	-3.4	-7.5	-9.1	-16.6	-16.3	-16.7	-20.1	-22.2	-22.7
%DIFF	0.1	-0.3	-0.5	-0.6	-1.1	-1.0	-1.0	-1.2	-1.2	-1.2
Corporate Profits Before Taxes, Current Dollars										
WITHOUT	172.8	192.7	200.5	226.8	240.4	256.3	297.2	336.4	366.8	395.5
WITH+PGNP	173.8	193.5	203.2	230.9	240.9	259.2	304.4	344.4	372.8	401.7
DIFF	1.0	0.8	2.7	4.2	0.5	3.0	7.2	8.0	6.0	6.2
%DIFF	0.6	0.4	1.4	1.8	0.2	1.2	2.4	2.4	1.6	1.6
Corporate Profits After Taxes, Current Dollars										
WITHOUT	101.5	112.6	121.4	137.2	145.7	155.8	181.2	205.9	225.3	243.9
WITH+PGNP	102.1	113.0	123.0	139.7	146.0	157.6	185.6	210.8	229.0	247.8
DIFF	0.6	0.5	1.7	2.5	0.3	1.8	4.4	4.9	3.7	3.8
%DIFF	0.6	0.4	1.4	1.8	0.2	1.2	2.4	2.4	1.6	1.6
Corporate Profits After Taxes, 1977 Dollars										
WITHOUT	103.9	107.5	108.5	115.0	114.8	115.9	127.0	135.9	140.4	143.7
WITH+PGNP	102.1	105.3	107.4	114.4	112.5	114.8	127.6	136.6	140.2	143.5
DIFF	-1.9	-2.2	-1.1	-0.6	-2.3	-1.1	0.6	0.7	-0.2	-0.2
%DIFF	-1.8	-2.0	-1.0	-0.5	-2.0	-0.9	0.4	0.5	-0.2	-0.1
AA Corporate Bond Rate for New Issues										
WITHOUT	7.58	8.53	8.74	9.13	9.33	8.83	8.62	8.41	8.32	8.22
WITH+PGNP	8.06	8.92	8.94	9.36	9.45	9.01	8.84	8.71	8.52	8.33
DIFF	0.49	0.39	0.20	0.23	0.13	0.18	0.22	0.30	0.20	0.11
%DIFF	6.4	4.5	2.3	2.5	1.4	2.1	2.5	3.6	2.4	1.4
Index of Industrial Production, 1977=1.00										
WITHOUT	1.010	1.066	1.097	1.156	1.210	1.251	1.338	1.419	1.479	1.539
WITH+PGNP	1.000	1.051	1.082	1.140	1.182	1.225	1.314	1.391	1.448	1.506
DIFF	-0.010	-0.015	-0.016	-0.016	-0.027	-0.027	-0.024	-0.028	-0.032	-0.032
%DIFF	-1.0	-1.4	-1.4	-1.4	-2.3	-2.1	-1.8	-2.0	-2.1	-2.1

TABLE 5
Impact of Pollution Control Expenditures
Holding Real GNP Constant

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Gross National Product, Current Dollars										
WITHOUT	1,837.4	2,051.1	2,258.7	2,519.3	2,784.1	3,046.3	3,390.8	3,764.0	4,124.0	4,494.8
WITH+GNP	1,873.1	2,091.3	2,303.0	2,568.4	2,840.6	3,110.6	3,463.8	3,846.7	4,217.7	4,601.3
DIFF	35.7	40.2	44.3	49.0	56.5	64.3	72.9	82.6	93.7	106.5
%DIFF	1.9	2.0	2.0	1.9	2.0	2.1	2.2	2.2	2.3	2.4
Gross National Product, 1977 Dollars										
WITHOUT	1,872.2	1,951.1	2,009.0	2,096.0	2,169.5	2,238.3	2,347.1	2,457.9	2,547.2	2,629.9
WITH+GNP	1,872.7	1,950.6	2,008.6	2,095.1	2,168.8	2,237.8	2,346.6	2,457.7	2,547.4	2,630.9
DIFF	0.4	-0.5	-0.4	-0.9	-0.7	-0.5	-0.4	-0.2	0.3	1.0
%DIFF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Implicit GNP Deflator, 1977=1.00										
WITHOUT	0.981	1.051	1.124	1.202	1.283	1.361	1.444	1.531	1.619	1.709
WITH+GNP	1.000	1.072	1.146	1.226	1.310	1.390	1.476	1.565	1.655	1.749
DIFF	0.019	0.021	0.022	0.024	0.026	0.029	0.031	0.034	0.037	0.040
%DIFF	1.9	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3
Consumer Price Index,1977=1.00										
WITHOUT	0.981	1.053	1.127	1.203	1.282	1.359	1.440	1.524	1.612	1.703
WITH+GNP	1.000	1.074	1.150	1.228	1.310	1.391	1.474	1.561	1.652	1.747
DIFF	0.019	0.021	0.023	0.025	0.028	0.031	0.034	0.037	0.040	0.044
%DIFF	1.9	2.0	2.1	2.1	2.2	2.3	2.4	2.4	2.5	2.6
Wholesale Price Index,1977=1.00										
WITHOUT	0.969	1.038	1.104	1.180	1.256	1.321	1.397	1.482	1.570	1.660
WITH+GNP	1.000	1.072	1.141	1.218	1.297	1.363	1.441	1.529	1.619	1.712
DIFF	0.031	0.034	0.036	0.038	0.040	0.042	0.044	0.047	0.049	0.052
%DIFF	3.2	3.3	3.3	3.2	3.2	3.2	3.2	3.1	3.1	3.1
Unemployment Rate, Percent										
WITHOUT	7.2	6.2	6.4	6.4	6.2	6.4	6.0	5.4	5.2	5.2
WITH+GNP	7.1	6.0	6.3	6.1	5.9	6.1	5.7	5.1	4.8	4.8
DIFF	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4	-0.4	-0.4
%DIFF	-2.1	-2.3	-2.7	-3.7	-4.6	-4.7	-5.4	-6.6	-7.5	-8.0
Gross Fixed Private Nonresidential Investment, 1977 Dollars										
WITHOUT	189.2	206.6	214.4	226.0	239.2	245.2	256.4	272.2	289.0	304.3
WITH+GNP	191.8	206.9	216.5	229.7	241.3	246.1	257.7	273.3	288.4	301.2
DIFF	2.6	0.3	2.2	3.8	2.1	0.9	1.3	1.2	-0.6	-3.1
%DIFF	1.4	0.2	1.0	1.7	0.9	0.4	0.5	0.4	-0.2	-1.0
Fixed Investment in Producers' Durable Equipment, 1977 Dollars										
WITHOUT	123.9	134.6	139.5	148.2	157.4	162.6	171.0	182.1	194.2	205.3
WITH+GNP	127.2	136.5	143.2	152.9	160.8	165.2	173.9	184.9	195.5	205.0
DIFF	3.3	1.9	3.7	4.7	3.4	2.5	2.8	2.8	1.4	-0.3
%DIFF	2.7	1.4	2.7	3.2	2.1	1.6	1.7	1.5	0.7	-0.2

TABLE 5 (continued)
Impact of Pollution Control Expenditures
Holding Real GNP Constant

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Fixed Investment in Nonresidential Structures, 1977 Dollars										
WITHOUT	65.4	72.3	75.2	78.0	82.0	82.6	85.3	89.9	94.5	98.5
WITH+GNP	64.5	70.5	73.4	76.8	80.4	80.7	83.4	88.0	92.4	95.6
DIFF	-0.9	-1.8	-1.8	-1.2	-1.5	-1.9	-1.8	-1.8	-2.2	-2.9
%DIFF	-1.4	-2.4	-2.4	-1.5	-1.8	-2.3	-2.2	-2.1	-2.3	-3.0
Housing Starts, Millions of Units										
WITHOUT	2.027	1.973	1.787	2.035	1.943	1.988	2.239	2.285	2.237	2.186
WITH+GNP	1.971	1.937	1.776	2.016	1.911	1.950	2.193	2.212	2.127	2.031
DIFF	-0.056	-0.037	-0.011	-0.018	-0.031	-0.037	-0.046	-0.073	-0.110	-0.155
%DIFF	-2.7	-1.9	-0.6	-0.9	-1.6	-1.9	-2.0	-3.2	-4.9	-7.1
Percentage Growth Rate of GNP, 1977 Dollars										
WITHOUT	5.0	4.2	3.0	4.3	3.5	3.2	4.9	4.7	3.6	3.2
WITH+GNP	5.0	4.2	3.0	4.3	3.5	3.2	4.9	4.7	3.7	3.3
DIFF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%DIFF	-0.1	-1.2	0.1	-0.6	0.3	0.4	0.1	0.2	0.6	0.9
Percentage Growth Rate of CPIU										
WITHOUT	6.2	7.3	7.0	6.8	6.6	6.0	5.9	5.8	5.8	5.7
WITH+GNP	6.4	7.4	7.0	6.8	6.7	6.1	6.0	5.9	5.8	5.7
DIFF	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1
%DIFF	3.0	1.5	0.6	0.5	1.9	1.9	0.8	1.1	1.5	1.6
Imports, 1977 Dollars										
WITHOUT	180.8	199.9	205.4	215.2	226.3	233.1	245.9	262.4	278.3	292.9
WITH+GNP	184.8	203.6	209.3	219.3	230.0	236.7	249.8	266.8	282.8	297.4
DIFF	4.0	3.7	3.9	4.1	3.7	3.5	3.9	4.4	4.5	4.5
%DIFF	2.2	1.9	1.9	1.9	1.6	1.5	1.6	1.7	1.6	1.5
Exports, 1977 Dollars										
WITHOUT	175.4	189.2	200.2	210.3	222.1	232.6	243.6	255.3	267.4	279.8
WITH+GNP	175.1	188.8	199.7	209.7	221.5	231.9	242.9	254.4	266.5	278.9
DIFF	-0.3	-0.4	-0.5	-0.6	-0.6	-0.7	-0.8	-0.8	-0.9	-1.0
%DIFF	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
Consumption of Autos and Parts, 1977 Dollars										
WITHOUT	83.7	88.2	87.4	92.5	94.7	99.0	107.6	114.8	120.3	124.1
WITH+GNP	81.0	85.3	84.5	89.1	90.3	93.9	102.0	109.0	114.4	117.8
DIFF	-2.7	-2.8	-2.8	-3.4	-4.4	-5.0	-5.6	-5.8	-5.9	-6.2
%DIFF	-3.2	-3.2	-3.3	-3.7	-4.6	-5.1	-5.2	-5.1	-4.9	-5.0
Consumption of Other Durables, 1977 Dollars										
WITHOUT	25.3	27.2	28.3	30.0	31.7	33.1	35.6	38.5	41.0	43.7
WITH+GNP	25.4	27.3	28.3	30.0	31.6	33.1	35.5	38.4	41.1	43.8
DIFF	0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.1
%DIFF	0.4	0.2	0.0	-0.2	-0.3	-0.2	-0.3	-0.2	0.1	0.3

TABLE 5 (continued)
Impact of Pollution Control Expenditures
Holding Real GNP Constant

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Consumption of Nondurables, 1977 Dollars										
WITHOUT	469.9	480.5	497.7	517.3	535.3	556.0	580.2	603.6	621.7	637.6
WITH+GNP	472.9	483.2	500.2	519.5	536.8	556.8	579.8	602.7	621.2	637.8
DIFF	2.9	2.7	2.5	2.1	1.5	0.8	-0.4	-0.9	-0.5	0.2
%DIFF	0.6	0.6	0.5	0.4	0.3	0.1	-0.1	-0.2	-0.1	0.0
Consumption of Services, 1977 Dollars										
WITHOUT	542.9	569.2	591.6	613.8	635.9	659.1	687.0	717.3	745.2	771.1
WITH+GNP	543.8	569.6	591.8	614.2	635.8	658.9	686.2	716.3	744.5	770.5
DIFF	0.9	0.4	0.2	0.3	-0.1	-0.3	-0.7	-1.0	-0.7	-0.7
%DIFF	0.2	0.1	0.0	0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.1
Disposable Personal Income, Current Dollars										
WITHOUT	1,270.1	1,417.8	1,568.6	1,746.0	1,921.3	2,106.8	2,334.9	2,580.5	2,824.7	3,079.2
WITH+GNP	1,292.3	1,441.9	1,594.1	1,773.0	1,952.6	2,143.6	2,376.9	2,628.4	2,881.9	3,148.7
DIFF	22.2	24.2	25.5	27.0	31.3	36.8	41.9	47.9	57.2	69.6
%DIFF	1.7	1.7	1.6	1.5	1.6	1.7	1.8	1.9	2.0	2.3
Disposable Personal Income, 1977 Dollars										
WITHOUT	1,293.9	1,353.7	1,405.7	1,468.1	1,520.6	1,576.5	1,653.1	1,730.2	1,795.3	1,857.7
WITH+GNP	1,292.0	1,349.8	1,400.2	1,460.6	1,512.3	1,568.2	1,644.2	1,720.6	1,786.7	1,851.1
DIFF	-2.0	-3.9	-5.5	-7.5	-8.3	-8.3	-8.9	-9.5	-8.6	-6.6
%DIFF	-0.2	-0.3	-0.4	-0.5	-0.5	-0.5	-0.5	-0.6	-0.5	-0.4
Corporate Profits Before Taxes, Current Dollars										
WITHOUT	172.8	192.7	200.5	225.8	240.4	256.3	297.2	336.4	366.8	395.5
WITH+GNP	172.7	193.0	201.5	229.3	242.9	258.0	299.7	340.5	370.2	397.0
DIFF	-0.1	0.2	1.0	2.5	2.5	1.7	2.5	4.1	3.4	1.5
%DIFF	-0.1	0.1	0.5	1.1	1.1	0.7	0.8	1.2	0.9	0.4
Corporate Profits After Taxes, Current Dollars										
WITHOUT	101.5	112.6	121.4	137.2	145.7	155.8	181.2	205.9	225.3	243.9
WITH+GNP	101.4	112.7	122.0	138.7	147.2	156.8	182.8	208.4	227.4	244.8
DIFF	-0.1	0.1	0.6	1.5	1.5	1.1	1.5	2.5	2.1	0.9
%DIFF	-0.1	0.1	0.5	1.1	1.1	0.7	0.8	1.2	0.9	0.4
Corporate Profits After Taxes, 1977 Dollars										
WITHOUT	103.4	106.9	107.9	114.4	114.2	115.3	126.4	135.2	139.7	143.0
WITH+GNP	101.4	105.1	106.6	113.8	113.7	114.4	125.8	135.3	139.4	142.1
DIFF	-2.0	-1.8	-1.3	-0.6	-0.5	-0.9	-0.6	0.1	-0.2	-0.9
%DIFF	-1.9	-1.7	-1.2	-0.5	-0.5	-0.8	-0.4	0.0	-0.2	-0.6
AA Corporate Bond Rate for New Issues										
WITHOUT	7.58	8.53	8.74	9.13	9.33	8.83	8.62	8.41	8.32	8.22
WITH+GNP	7.95	8.87	9.01	9.29	9.53	9.12	8.91	8.76	8.62	8.46
DIFF	0.38	0.34	0.27	0.16	0.20	0.30	0.29	0.35	0.30	0.24
%DIFF	5.0	4.0	3.1	1.8	2.2	3.4	3.4	4.2	3.6	2.9
Index of Industrial Production, 1977=1.00										
WITHOUT	1.009	1.065	1.096	1.155	1.209	1.250	1.337	1.418	1.478	1.537
WITH+GNP	1.000	1.055	1.085	1.144	1.197	1.235	1.320	1.401	1.461	1.516
DIFF	-0.009	-0.010	-0.011	-0.011	-0.012	-0.015	-0.017	-0.017	-0.017	-0.021
%DIFF	-0.9	-1.0	-1.0	-0.9	-1.0	-1.2	-1.2	-1.2	-1.2	-1.3

TABLE 6
Impact of Pollution Control Expenditures
If Estimated Expenditures Were Higher

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Gross National Product, Current Dollars														
WITHOUT	1,837.1	2,049.7	2,256.5	2,517.2	2,782.6	3,045.2	3,389.3	3,760.8	4,118.1	4,486.0	4,874.0	5,288.1	5,731.0	6,214.2
WITHMORE	1,887.4	2,103.1	2,323.5	2,605.9	2,883.6	3,152.6	3,503.6	3,884.4	4,255.2	4,634.4	5,035.6	5,472.6	5,940.3	6,441.0
DIFF	50.2	53.4	67.0	88.7	101.1	107.4	114.3	123.6	137.1	148.4	161.6	184.5	209.3	226.8
%DIFF	2.7	2.6	3.0	3.5	3.6	3.5	3.4	3.3	3.3	3.3	3.3	3.5	3.7	3.6
Gross National Product, 1977 Dollars														
WITHOUT	1,883.8	1,962.4	2,020.3	2,108.3	2,183.0	2,252.5	2,361.6	2,472.3	2,560.9	2,643.4	2,724.0	2,804.6	2,886.4	2,973.9
WITHMORE	1,887.0	1,960.2	2,023.7	2,119.7	2,190.5	2,251.6	2,353.1	2,458.6	2,544.9	2,623.2	2,701.2	2,783.8	2,866.5	2,950.1
DIFF	3.1	-2.1	3.4	11.4	7.4	-0.9	-8.6	-13.6	-16.0	-20.1	-22.8	-20.8	-19.9	-23.8
%DIFF	0.2	-0.1	0.2	0.5	0.3	0.0	-0.4	-0.6	-0.6	-0.8	-0.8	-0.7	-0.7	-0.8
Implicit GNP Deflator, 1977=1.00														
WITHOUT	0.975	1.044	1.117	1.194	1.275	1.352	1.435	1.521	1.608	1.697	1.789	1.885	1.985	2.089
WITHMORE	1.000	1.073	1.148	1.229	1.316	1.400	1.489	1.580	1.672	1.766	1.864	1.966	2.072	2.183
DIFF	0.025	0.028	0.031	0.035	0.042	0.048	0.054	0.059	0.064	0.070	0.075	0.080	0.087	0.094
%DIFF	2.6	2.7	2.8	3.0	3.3	3.6	3.7	3.9	4.0	4.1	4.2	4.3	4.4	4.5
Consumer Price Index,1977=1.00														
WITHOUT	0.976	1.048	1.121	1.197	1.275	1.352	1.433	1.516	1.603	1.694	1.788	1.887	1.991	2.100
WITHMORE	1.000	1.075	1.151	1.231	1.315	1.398	1.484	1.572	1.665	1.761	1.860	1.964	2.073	2.188
DIFF	0.024	0.027	0.030	0.034	0.040	0.046	0.051	0.056	0.061	0.067	0.072	0.077	0.082	0.088
%DIFF	2.4	2.6	2.7	2.8	3.1	3.4	3.6	3.7	3.8	3.9	4.0	4.1	4.1	4.2
Wholesale Price Index,1977=1.00														
WITHOUT	0.967	1.036	1.102	1.177	1.253	1.318	1.394	1.479	1.566	1.655	1.749	1.848	1.952	2.061
WITHMORE	1.000	1.073	1.142	1.223	1.305	1.375	1.456	1.546	1.638	1.734	1.833	1.938	2.048	2.163
DIFF	0.033	0.037	0.040	0.045	0.051	0.057	0.062	0.067	0.072	0.079	0.084	0.090	0.096	0.102
%DIFF	3.4	3.5	3.7	3.9	4.1	4.3	4.4	4.5	4.6	4.8	4.8	4.9	4.9	5.0
Unemployment Rate, Percent														
WITHOUT	7.2	6.2	6.5	6.4	6.2	6.4	6.0	5.4	5.3	5.2	5.2	5.2	5.2	5.2
WITHMORE	7.0	6.1	6.2	5.9	5.7	6.0	5.7	5.1	4.9	4.9	4.9	4.8	4.7	4.7
DIFF	-0.2	-0.1	-0.2	-0.4	-0.5	-0.4	-0.3	-0.3	-0.3	-0.4	-0.3	-0.4	-0.4	-0.4
%DIFF	-2.8	-2.3	-3.8	-7.0	-7.7	-5.9	-5.1	-5.5	-6.4	-6.8	-6.6	-7.6	-8.6	-8.4
Gross Fixed Private Nonresidential Investment, 1977 Dollars														
WITHOUT	190.0	207.3	215.0	226.7	240.2	246.4	257.7	273.3	290.0	305.0	317.3	326.5	335.4	346.0
WITHMORE	190.5	205.4	215.1	230.2	243.4	247.9	258.2	272.8	287.2	299.9	309.6	318.8	329.0	339.5
DIFF	0.5	-1.9	0.1	3.5	3.3	1.5	0.5	-0.5	-2.8	-5.1	-7.6	-7.7	-6.4	-6.6
%DIFF	0.3	-0.9	0.0	1.5	1.4	0.6	0.2	-0.2	-1.0	-1.7	-2.4	-2.4	-1.9	-1.9
Fixed Investment in Producers' Durable Equipment, 1977 Dollars														
WITHOUT	124.3	134.9	139.7	148.5	157.8	163.1	171.6	182.6	194.5	205.5	215.0	222.4	229.5	237.9
WITHMORE	126.6	135.6	142.3	153.3	162.1	166.3	174.3	184.7	194.9	204.2	211.9	219.1	226.9	234.9
DIFF	2.3	0.7	2.6	4.8	4.3	3.1	2.7	2.2	0.4	-1.3	-3.1	-3.3	-2.7	-3.1
%DIFF	1.9	0.5	1.9	3.2	2.7	1.9	1.6	1.2	0.2	-0.6	-1.5	-1.5	-1.2	-1.3

TABLE 6 (continued)
Impact of Pollution Control Expenditures
If Estimated Expenditures Were Higher

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Fixed Investment in Nonresidential Structures, 1977 Dollars														
WITHOUT	66.0	72.8	75.7	78.5	82.6	83.3	86.0	90.6	95.2	99.1	101.7	103.3	104.9	107.0
WITHMORE	63.9	69.9	72.8	76.9	81.3	81.4	83.6	87.6	91.7	95.0	96.9	98.7	101.0	103.4
DIFF	-2.1	-2.9	-2.9	-1.6	-1.3	-1.9	-2.5	-3.0	-3.5	-4.1	-4.8	-4.6	-3.9	-3.6
%DIFF	-3.2	-4.0	-3.8	-2.0	-1.5	-2.2	-2.9	-3.3	-3.7	-4.1	-4.7	-4.5	-3.8	-3.4
Housing Starts, Millions of Units														
WITHOUT	2.021	1.956	1.771	2.030	1.946	1.994	2.237	2.270	2.209	2.149	2.096	2.066	2.043	2.062
WITHMORE	1.967	1.922	1.771	2.006	1.887	1.914	2.161	2.194	2.134	2.069	2.040	2.053	2.032	1.997
DIFF	-0.054	-0.034	0.000	-0.024	-0.059	-0.079	-0.076	-0.076	-0.075	-0.080	-0.056	-0.013	-0.011	-0.066
%DIFF	-2.7	-1.7	0.0	-1.2	-3.0	-4.0	-3.4	-3.3	-3.4	-3.7	-2.7	-0.6	-0.6	-3.2
Percentage Growth Rate of GNP, 1977 Dollars														
WITHOUT	5.0	4.2	3.0	4.4	3.5	3.2	4.8	4.7	3.6	3.2	3.0	3.0	2.9	3.0
WITHMORE	4.9	3.9	3.2	4.7	3.3	2.8	4.5	4.5	3.5	3.1	3.0	3.1	3.0	2.9
DIFF	-0.2	-0.3	0.3	0.4	-0.2	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1	0.1	0.1	-0.1
%DIFF	-3.4	-6.8	9.6	8.9	-5.9	-12.3	-7.0	-4.2	-2.1	-4.4	-2.5	3.3	1.9	-3.8
Percentage Growth Rate of CPIU														
WITHOUT	6.2	7.3	7.0	6.8	6.6	6.0	5.9	5.8	5.7	5.6	5.6	5.5	5.5	5.5
WITHMORE	6.5	7.5	7.1	6.9	6.9	6.3	6.1	6.0	5.9	5.8	5.6	5.6	5.6	5.5
DIFF	0.3	0.2	0.1	0.1	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1
%DIFF	4.0	2.5	1.6	2.1	4.5	4.8	3.0	2.4	2.2	2.1	1.5	0.8	1.0	1.4
Imports, 1977 Dollars														
WITHOUT	180.7	199.7	205.1	214.9	226.0	233.0	245.7	262.2	277.8	292.2	306.0	319.6	333.3	347.7
WITHMORE	186.6	204.9	210.6	222.0	233.7	239.8	251.9	268.0	283.2	296.8	309.8	323.5	337.6	351.7
DIFF	5.9	5.2	5.5	7.1	7.6	6.8	6.2	5.9	5.4	4.6	3.8	3.9	4.3	4.0
%DIFF	3.3	2.6	2.7	3.3	3.4	2.9	2.5	2.2	2.0	1.6	1.2	1.2	1.3	1.2
Exports, 1977 Dollars														
WITHOUT	175.7	189.6	200.6	210.7	222.5	233.0	244.1	255.8	267.8	280.3	293.3	306.9	320.9	335.6
WITHMORE	175.5	189.0	199.9	210.2	222.0	232.0	242.7	254.0	265.8	278.0	290.8	304.1	318.1	332.5
DIFF	-0.2	-0.5	-0.6	-0.5	-0.6	-1.0	-1.4	-1.8	-2.0	-2.3	-2.6	-2.7	-2.8	-3.1
%DIFF	-0.1	-0.3	-0.3	-0.2	-0.3	-0.4	-0.6	-0.7	-0.7	-0.8	-0.9	-0.9	-0.9	-0.9
Consumption of Autos and Parts, 1977 Dollars														
WITHOUT	83.9	88.3	87.5	92.7	94.9	99.2	107.7	114.9	120.5	124.2	127.9	131.7	135.6	139.4
WITHMORE	81.5	85.4	84.9	90.4	91.3	94.0	101.6	108.6	114.4	117.8	121.7	126.0	129.7	133.0
DIFF	-2.4	-2.9	-2.6	-2.3	-3.6	-5.2	-6.1	-6.3	-6.1	-6.4	-6.2	-5.7	-5.8	-6.4
%DIFF	-2.8	-3.3	-2.9	-2.4	-3.8	-5.2	-5.7	-5.5	-5.1	-5.1	-4.8	-4.4	-4.3	-4.6
Consumption of Other Durables, 1977 Dollars														
WITHOUT	25.4	27.3	28.4	30.2	31.8	33.3	35.8	38.6	41.2	43.8	46.3	48.8	51.4	54.2
WITHMORE	25.6	27.4	28.5	30.4	32.0	33.4	35.8	38.6	41.2	43.8	46.3	48.8	51.5	54.2
DIFF	0.2	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%DIFF	0.6	0.1	0.3	0.8	0.7	0.4	0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.1

TABLE 6 (continued)
Impact of Pollution Control Expenditures
If Estimated Expenditures Were Higher

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Consumption of Nondurables, 1977 Dollars														
WITHOUT	472.4	483.0	500.2	519.9	538.1	558.9	583.1	606.5	624.5	640.4	656.6	673.6	690.9	708.9
WITHMORE	478.9	488.5	506.3	527.3	544.8	563.7	585.2	607.1	624.8	640.0	655.7	672.6	689.4	706.7
DIFF	6.5	5.5	6.1	7.3	6.7	4.8	2.2	0.6	0.3	-0.5	-0.9	-1.0	-1.5	-2.2
%DIFF	1.4	1.1	1.2	1.4	1.2	0.9	0.4	0.1	0.0	-0.1	-0.1	-0.2	-0.2	-0.3
Consumption of Services, 1977 Dollars														
WITHOUT	546.8	573.1	595.6	617.9	640.1	663.5	691.6	722.0	749.9	775.7	801.7	828.1	854.4	881.1
WITHMORE	549.0	574.4	596.9	620.8	642.9	665.3	691.7	721.1	748.8	774.2	799.9	825.8	851.6	877.5
DIFF	2.2	1.3	1.3	2.9	2.7	1.7	0.1	-0.9	-1.0	-1.5	-1.9	-2.3	-2.8	-3.6
%DIFF	0.4	0.2	0.2	0.5	0.4	0.3	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.4
Disposable Personal Income, Current Dollars														
WITHOUT	1,270.0	1,417.1	1,567.4	1,744.7	1,920.1	2,105.9	2,333.9	2,578.9	2,821.7	3,074.4	3,340.8	3,625.7	3,928.3	4,256.6
WITHMORE	1,303.1	1,452.3	1,609.5	1,797.3	1,980.9	2,173.9	2,407.5	2,657.8	2,909.0	3,170.4	3,445.4	3,741.9	4,059.3	4,402.5
DIFF	33.1	35.2	42.1	52.6	60.8	68.0	73.6	78.9	87.3	96.0	104.6	116.2	131.0	145.9
%DIFF	2.6	2.5	2.7	3.0	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.2	3.3	3.4
Disposable Personal Income, 1977 Dollars														
WITHOUT	1,301.5	1,361.2	1,413.2	1,476.1	1,529.2	1,585.7	1,662.6	1,739.8	1,804.6	1,866.6	1,927.3	1,988.7	2,049.9	2,114.7
WITHMORE	1,302.8	1,358.6	1,412.0	1,477.2	1,527.9	1,580.9	1,653.5	1,726.3	1,788.9	1,848.6	1,907.3	1,968.3	2,029.8	2,093.6
DIFF	1.3	-2.6	-1.2	1.1	-1.3	-4.7	-9.1	-13.5	-15.7	-18.0	-20.0	-20.4	-20.1	-21.0
%DIFF	0.1	-0.2	-0.1	0.1	-0.1	-0.3	-0.5	-0.8	-0.9	-1.0	-1.0	-1.0	-1.0	-1.0
Corporate Profits Before Taxes, Current Dollars														
WITHOUT	172.8	192.4	200.1	226.6	240.6	256.6	297.3	336.0	365.7	394.0	423.5	452.9	486.3	525.3
WITHMORE	174.0	193.7	204.4	236.5	250.9	263.6	303.6	344.1	375.5	404.0	434.3	469.8	508.5	547.2
DIFF	1.2	1.3	4.3	9.9	10.4	7.0	6.3	8.1	9.8	10.0	10.8	16.9	22.1	21.9
%DIFF	0.7	0.7	2.1	4.4	4.3	2.7	2.1	2.4	2.7	2.5	2.5	3.7	4.6	4.2
Corporate Profits After Taxes, Current Dollars														
WITHOUT	101.4	112.4	121.1	137.1	145.8	156.0	181.3	205.6	224.6	243.0	262.2	281.6	303.7	329.4
WITHMORE	102.1	113.2	123.7	143.1	152.1	160.2	185.2	210.6	230.7	249.2	268.9	292.1	317.5	343.1
DIFF	0.7	0.8	2.6	6.0	6.3	4.3	3.9	5.0	6.0	6.2	6.7	10.5	13.8	13.7
%DIFF	0.7	0.7	2.1	4.4	4.3	2.7	2.1	2.4	2.7	2.5	2.5	3.7	4.6	4.2
Corporate Profits After Taxes, 1977 Dollars														
WITHOUT	103.9	107.3	108.3	114.9	114.9	116.1	127.1	135.8	140.0	143.3	146.5	149.2	152.6	157.2
WITHMORE	102.1	105.4	107.9	116.9	116.5	115.7	125.9	134.9	139.5	142.5	145.7	150.1	154.7	158.7
DIFF	-1.8	-1.9	-0.4	2.0	1.6	-0.4	-1.2	-0.9	-0.6	-0.8	-0.8	0.9	2.1	1.5
%DIFF	-1.7	-1.8	-0.3	1.7	1.4	-0.3	-0.9	-0.6	-0.4	-0.6	-0.6	0.6	1.4	1.0
AA Corporate Bond Rate for New Issues														
WITHOUT	7.57	8.52	8.72	9.10	9.31	8.83	8.62	8.41	8.30	8.19	7.98	7.88	7.79	7.64
WITHMORE	8.06	8.93	9.03	9.47	9.78	9.36	9.09	8.87	8.67	8.47	8.30	8.20	8.10	7.96
DIFF	0.49	0.41	0.31	0.37	0.47	0.54	0.47	0.47	0.37	0.28	0.32	0.33	0.31	0.32
%DIFF	6.5	4.8	3.6	4.0	5.1	6.1	5.4	5.5	4.5	3.4	4.0	4.1	4.0	4.2
Index of Industrial Production, 1977=1.00														
WITHOUT	1.009	1.065	1.096	1.155	1.210	1.252	1.338	1.418	1.477	1.536	1.598	1.659	1.722	1.793
WITHMORE	1.000	1.051	1.084	1.151	1.203	1.235	1.313	1.391	1.451	1.506	1.563	1.628	1.693	1.758
DIFF	-0.009	-0.014	-0.012	-0.004	-0.006	-0.017	-0.024	-0.028	-0.026	-0.030	-0.035	-0.031	-0.029	-0.035
%DIFF	-0.9	-1.3	-1.1	-0.3	-0.5	-1.3	-1.8	-1.9	-1.8	-1.9	-2.2	-1.9	-1.7	-2.0

TABLE 7
Impact of Pollution Control Expenditures
If Expenditures Dropped Off Sharply

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Gross National Product, Current Dollars														
WITHOUT	1,837.1	2,049.7	2,256.5	2,517.2	2,782.6	3,045.2	3,389.3	3,760.8	4,118.1	4,486.0	4,874.0	5,288.1	5,731.0	6,214.2
WITHLESS	1,887.2	2,102.5	2,319.0	2,594.3	2,863.8	3,121.5	3,454.1	3,815.6	4,169.8	4,533.7	4,919.8	5,339.9	5,784.7	6,256.7
DIFF	50.0	52.8	62.5	77.1	81.2	76.3	64.8	54.8	51.6	47.8	45.8	51.7	53.7	42.5
%DIFF	2.7	2.6	2.8	3.1	2.9	2.5	1.9	1.5	1.3	1.1	0.9	1.0	0.9	0.7
Gross National Product, 1977 Dollars														
WITHOUT	1,883.8	1,962.3	2,020.3	2,108.3	2,183.0	2,252.5	2,361.6	2,472.2	2,560.9	2,643.3	2,723.9	2,804.5	2,886.4	2,973.9
WITHLESS	1,886.8	1,959.8	2,020.4	2,112.5	2,181.0	2,240.0	2,337.7	2,442.6	2,531.9	2,614.4	2,695.7	2,779.8	2,861.7	2,943.9
DIFF	2.9	-2.5	0.1	4.2	-2.0	-12.5	-23.9	-29.6	-29.0	-28.9	-28.3	-24.8	-24.7	-29.9
%DIFF	0.2	-0.1	0.0	0.2	-0.1	-0.6	-1.0	-1.2	-1.1	-1.1	-1.0	-0.9	-0.9	-1.0
Implicit GNP Deflator, 1977=1.00														
WITHOUT	0.975	1.044	1.117	1.194	1.275	1.352	1.435	1.521	1.608	1.697	1.789	1.885	1.985	2.089
WITHLESS	1.000	1.072	1.148	1.228	1.313	1.393	1.477	1.562	1.647	1.734	1.825	1.921	2.021	2.125
DIFF	0.025	0.028	0.031	0.034	0.038	0.042	0.042	0.041	0.039	0.037	0.036	0.035	0.036	0.036
%DIFF	2.6	2.7	2.8	2.9	3.0	3.1	3.0	2.7	2.4	2.2	2.0	1.9	1.8	1.7
Consumer Price Index, 1977=1.00														
WITHOUT	0.976	1.048	1.121	1.197	1.275	1.352	1.433	1.516	1.603	1.694	1.788	1.887	1.991	2.100
WITHLESS	1.000	1.075	1.151	1.230	1.313	1.393	1.475	1.559	1.646	1.736	1.829	1.928	2.033	2.142
DIFF	0.024	0.027	0.030	0.033	0.037	0.041	0.043	0.043	0.042	0.042	0.041	0.041	0.042	0.042
%DIFF	2.4	2.6	2.7	2.8	2.9	3.0	3.0	2.8	2.6	2.5	2.3	2.2	2.1	2.0
Wholesale Price Index, 1977=1.00														
WITHOUT	0.967	1.036	1.102	1.177	1.253	1.318	1.394	1.479	1.566	1.655	1.749	1.848	1.952	2.061
WITHLESS	1.000	1.073	1.142	1.221	1.300	1.365	1.439	1.519	1.602	1.688	1.778	1.876	1.978	2.084
DIFF	0.033	0.037	0.040	0.043	0.046	0.047	0.044	0.040	0.036	0.033	0.029	0.027	0.026	0.023
%DIFF	3.4	3.5	3.6	3.7	3.7	3.5	3.2	2.7	2.3	2.0	1.7	1.5	1.3	1.1
Unemployment Rate, Percent														
WITHOUT	7.2	6.2	6.5	6.4	6.2	6.4	6.0	5.4	5.3	5.2	5.2	5.2	5.2	5.2
WITHLESS	7.0	6.1	6.3	6.1	5.9	6.3	6.0	5.5	5.2	5.2	5.1	5.0	5.0	5.0
DIFF	-0.2	-0.1	-0.2	-0.3	-0.3	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.2	-0.2
%DIFF	-2.8	-2.1	-2.7	-5.0	-4.3	-1.7	-0.1	0.7	-0.6	-1.7	-2.4	-3.7	-4.3	-3.3
Gross Fixed Private Nonresidential Investment, 1977 Dollars														
WITHOUT	190.0	207.3	215.0	226.7	240.2	246.4	257.7	273.3	290.0	305.0	317.3	326.5	335.4	346.0
WITHLESS	190.4	205.0	212.0	223.3	233.6	234.6	240.6	254.3	271.7	288.2	301.3	312.7	323.5	333.6
DIFF	0.3	-2.3	-3.0	-3.4	-6.5	-11.7	-17.1	-19.0	-18.2	-16.8	-15.9	-13.8	-11.9	-12.5
%DIFF	0.2	-1.1	-1.4	-1.5	-2.7	-4.8	-6.6	-7.0	-6.3	-5.5	-5.0	-4.2	-3.5	-3.6
Fixed Investment in Producers' Durable Equipment, 1977 Dollars														
WITHOUT	124.3	134.9	139.7	148.5	157.8	163.1	171.6	182.6	194.5	205.5	215.0	222.4	229.5	237.9
WITHLESS	126.5	135.4	139.9	148.1	154.8	156.1	160.6	170.3	182.6	194.4	204.1	212.6	220.7	228.4
DIFF	2.2	0.4	0.2	-0.4	-3.0	-7.0	-11.0	-12.3	-11.9	-11.1	-10.9	-9.8	-8.8	-9.5
%DIFF	1.8	0.3	0.2	-0.3	-1.9	-4.3	-6.4	-6.7	-6.1	-5.4	-5.1	-4.4	-3.8	-4.0

TABLE 7 (continued)
Impact of Pollution Control Expenditures
If Expenditures Dropped Off Sharply

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Fixed Investment in Nonresidential Structures, 1977 Dollars														
WITHOUT	66.0	72.8	75.7	78.5	82.6	83.3	86.0	90.6	95.2	99.1	101.7	103.3	104.9	107.0
WITHLESS	63.8	69.8	72.2	75.3	78.9	78.5	79.9	83.8	88.8	93.5	96.7	99.4	102.0	104.3
DIFF	-2.1	-3.0	-3.5	-3.2	-3.7	-4.8	-6.2	-6.8	-6.4	-5.6	-5.0	-3.9	-2.9	-2.8
%DIFF	-3.2	-4.1	-4.7	-4.1	-4.4	-5.8	-7.2	-7.5	-6.7	-5.7	-4.9	-3.8	-2.8	-2.6
Housing Starts, Millions of Units														
WITHOUT	2.021	1.956	1.771	2.030	1.946	1.994	2.237	2.270	2.209	2.149	2.096	2.066	2.043	2.062
WITHLESS	1.967	1.923	1.774	2.020	1.919	1.968	2.235	2.283	2.223	2.157	2.122	2.128	2.097	2.061
DIFF	-0.054	-0.033	0.002	-0.010	-0.027	-0.026	-0.003	0.013	0.013	0.007	0.025	0.062	0.054	-0.001
%DIFF	-2.6	-1.7	0.1	-0.5	-1.4	-1.3	-0.1	0.6	0.6	0.3	1.2	3.0	2.6	-0.1
Percentage Growth Rate of GNP, 1977 Dollars														
WITHOUT	5.0	4.2	3.0	4.4	3.5	3.2	4.8	4.7	3.6	3.2	3.0	3.0	2.9	3.0
WITHLESS	4.9	3.9	3.1	4.6	3.2	2.7	4.4	4.5	3.7	3.3	3.1	3.1	2.9	2.9
DIFF	-0.2	-0.3	0.1	0.2	-0.3	-0.5	-0.5	-0.2	0.1	0.0	0.1	0.2	0.0	-0.2
%DIFF	-3.6	-7.1	4.7	4.7	-8.5	-15.0	-10.0	-4.2	1.9	1.3	1.9	5.4	1.0	-5.2
Percentage Growth Rate of CPIU														
WITHOUT	6.2	7.3	7.0	6.8	6.6	6.0	5.9	5.8	5.7	5.6	5.6	5.5	5.5	5.5
WITHLESS	6.5	7.5	7.1	6.9	6.7	6.1	5.9	5.7	5.6	5.5	5.4	5.4	5.4	5.4
DIFF	0.3	0.2	0.1	0.1	0.2	0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1
%DIFF	4.0	2.4	1.3	1.4	2.9	1.9	-1.0	-2.8	-3.3	-3.3	-2.9	-2.4	-1.6	-1.4
Imports, 1977 Dollars														
WITHOUT	180.7	199.7	205.1	215.0	226.1	233.0	245.7	262.2	277.8	292.2	306.0	319.6	333.3	347.7
WITHLESS	186.6	204.8	209.8	219.9	230.3	235.1	245.3	259.9	274.8	288.5	301.6	315.2	328.8	342.3
DIFF	5.9	5.1	4.7	5.0	4.3	2.1	-0.4	-2.3	-3.0	-3.7	-4.4	-4.4	-4.5	-5.4
%DIFF	3.3	2.6	2.3	2.3	1.9	0.9	-0.2	-0.9	-1.1	-1.3	-1.4	-1.4	-1.3	-1.6
Exports, 1977 Dollars														
WITHOUT	175.7	189.6	200.6	210.7	222.5	233.0	244.1	255.8	267.8	280.3	293.3	306.9	320.9	335.6
WITHLESS	175.5	189.0	199.9	210.0	221.7	231.8	242.4	253.8	265.8	278.3	291.4	305.0	319.2	333.8
DIFF	-0.2	-0.6	-0.7	-0.7	-0.8	-1.2	-1.7	-2.0	-2.0	-2.0	-2.0	-1.8	-1.7	-1.8
%DIFF	-0.1	-0.3	-0.3	-0.3	-0.4	-0.5	-0.7	-0.8	-0.8	-0.7	-0.7	-0.6	-0.5	-0.5
Consumption of Autos and Parts, 1977 Dollars														
WITHOUT	83.9	88.3	87.5	92.7	94.9	99.2	107.7	114.9	120.5	124.2	127.9	131.7	135.6	139.4
WITHLESS	81.5	85.3	84.8	90.3	91.3	94.1	101.8	108.9	114.7	118.3	122.2	126.3	129.9	133.2
DIFF	-2.4	-2.9	-2.7	-2.4	-3.7	-5.1	-6.0	-6.0	-5.8	-5.9	-5.7	-5.4	-5.7	-6.3
%DIFF	-2.9	-3.3	-3.0	-2.6	-3.9	-5.2	-5.6	-5.3	-4.8	-4.7	-4.5	-4.1	-4.2	-4.5
Consumption of Other Durables, 1977 Dollars														
WITHOUT	25.4	27.3	28.4	30.2	31.8	33.3	35.8	38.6	41.2	43.8	46.3	48.8	51.4	54.2
WITHLESS	25.6	27.4	28.4	30.3	31.9	33.2	35.5	38.3	40.9	43.5	46.1	48.6	51.3	54.1
DIFF	0.2	0.0	0.0	0.1	0.1	-0.1	-0.2	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	-0.1
%DIFF	0.6	0.1	0.2	0.5	0.2	-0.2	-0.6	-0.9	-0.8	-0.7	-0.5	-0.3	-0.2	-0.2

TABLE 7(continued)
Impact of Pollution Control Expenditures
If Expenditures Dropped Off Sharply

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Consumption of Nondurables, 1977 Dollars														
WITHOUT	472.4	483.0	500.2	519.9	538.1	558.9	583.1	606.5	624.5	640.4	656.6	673.6	690.9	708.9
WITHLESS	478.9	488.4	505.9	526.3	543.1	561.3	581.4	601.9	618.2	632.4	647.1	663.1	679.0	695.7
DIFF	6.5	5.5	5.7	6.3	5.0	2.4	-1.6	-4.6	-6.4	-8.0	-9.4	-10.5	-11.8	-13.1
%DIFF	1.4	1.1	1.1	1.2	0.9	0.4	-0.3	-0.8	-1.0	-1.2	-1.4	-1.6	-1.7	-1.9
Consumption of Services, 1977 Dollars														
WITHOUT	546.8	573.1	595.6	617.9	640.1	663.5	691.6	722.0	749.9	775.7	801.7	828.1	854.4	881.1
WITHLESS	549.0	574.3	596.7	620.2	641.9	663.9	689.7	718.5	745.8	771.1	796.9	823.0	848.9	875.0
DIFF	2.2	1.2	1.1	2.3	1.7	0.4	-1.9	-3.5	-4.1	-4.6	-4.8	-5.1	-5.5	-6.1
%DIFF	0.4	0.2	0.2	0.4	0.3	0.1	-0.3	-0.5	-0.5	-0.6	-0.6	-0.6	-0.6	-0.7
Disposable Personal Income, Current Dollars														
WITHOUT	1,270.0	1,417.1	1,567.4	1,744.7	1,920.1	2,105.9	2,333.9	2,578.9	2,821.7	3,074.4	3,340.8	3,625.7	3,928.3	4,256.6
WITHLESS	1,303.0	1,452.0	1,607.3	1,791.3	1,969.7	2,155.0	2,377.3	2,615.5	2,853.0	3,105.0	3,370.0	3,658.0	3,964.9	4,294.2
DIFF	33.0	35.0	39.9	46.6	49.6	49.2	43.4	36.6	31.3	30.5	29.2	32.2	36.6	37.6
%DIFF	2.6	2.5	2.5	2.7	2.6	2.3	1.9	1.4	1.1	1.0	0.9	0.9	0.9	0.9
Disposable Personal Income, 1977 Dollars														
WITHOUT	1,301.5	1,361.2	1,413.2	1,476.1	1,529.2	1,585.7	1,662.6	1,739.7	1,804.6	1,866.6	1,927.3	1,988.7	2,049.9	2,114.7
WITHLESS	1,302.7	1,358.4	1,410.4	1,473.5	1,522.4	1,573.3	1,643.0	1,714.7	1,776.5	1,838.6	1,898.9	1,962.0	2,024.5	2,088.6
DIFF	1.2	-2.7	-2.8	-2.5	-6.8	-12.4	-19.6	-25.0	-28.1	-28.0	-28.4	-26.7	-25.3	-26.0
%DIFF	0.1	-0.2	-0.2	-0.2	-0.4	-0.8	-1.2	-1.4	-1.6	-1.5	-1.5	-1.3	-1.2	-1.2
Corporate Profits Before Taxes, Current Dollars														
WITHOUT	172.8	192.4	200.1	226.6	240.6	256.6	297.3	336.0	365.7	394.0	423.5	452.9	486.3	525.3
WITHLESS	173.9	193.6	203.3	233.8	247.6	260.0	297.9	336.8	372.0	399.8	431.3	464.7	498.2	530.5
DIFF	1.1	1.2	3.2	7.2	7.0	3.4	0.6	0.8	6.3	5.7	7.9	11.7	11.9	5.2
%DIFF	0.7	0.6	1.6	3.2	2.9	1.3	0.2	0.2	1.7	1.5	1.9	2.6	2.4	1.0
Corporate Profits After Taxes, Current Dollars														
WITHOUT	101.4	112.4	121.1	137.1	145.8	156.0	181.3	205.6	224.6	243.0	262.2	281.6	303.7	329.4
WITHLESS	102.1	113.1	123.0	141.4	150.1	158.0	181.6	206.1	228.5	246.5	267.1	288.9	311.1	332.6
DIFF	0.7	0.7	1.9	4.3	4.3	2.1	0.3	0.5	3.9	3.5	4.9	7.3	7.4	3.2
%DIFF	0.7	0.6	1.6	3.2	2.9	1.3	0.2	0.2	1.7	1.5	1.9	2.6	2.4	1.0
Corporate Profits After Taxes, 1977 Dollars														
WITHOUT	103.9	107.3	108.3	114.9	114.9	116.1	127.1	135.8	140.0	143.3	146.5	149.2	152.6	157.2
WITHLESS	102.1	105.3	107.4	115.7	115.4	114.8	124.8	134.0	140.9	144.3	148.5	152.6	156.1	158.8
DIFF	-1.8	-2.0	-0.9	0.8	0.4	-1.2	-2.3	-1.8	0.8	1.0	2.0	3.4	3.5	1.7
%DIFF	-1.7	-1.8	-0.8	0.7	0.4	-1.1	-1.8	-1.3	0.6	0.7	1.4	2.3	2.3	1.1
AA Corporate Bond Rate for New Issues														
WITHOUT	7.57	8.52	8.72	9.10	9.31	8.83	8.62	8.41	8.30	8.19	7.98	7.88	7.79	7.64
WITHLESS	8.06	8.92	8.99	9.36	9.58	9.07	8.71	8.39	8.15	7.94	7.83	7.81	7.75	7.62
DIFF	0.49	0.40	0.28	0.26	0.27	0.25	0.09	-0.02	-0.15	-0.24	-0.15	-0.07	-0.04	-0.02
%DIFF	6.4	4.7	3.2	2.9	2.9	2.8	1.0	-0.2	-1.8	-3.0	-1.9	-0.9	-0.5	-0.2
Index of Industrial Production, 1977=1.00														
WITHOUT	1.010	1.065	1.096	1.155	1.210	1.252	1.338	1.418	1.477	1.536	1.598	1.659	1.722	1.793
WITHLESS	1.000	1.051	1.082	1.147	1.198	1.229	1.307	1.385	1.448	1.510	1.574	1.641	1.705	1.768
DIFF	-0.010	-0.014	-0.014	-0.008	-0.012	-0.022	-0.031	-0.034	-0.029	-0.026	-0.025	-0.018	-0.017	-0.025
%DIFF	-0.9	-1.3	-1.2	-0.7	-1.0	-1.8	-2.3	-2.4	-2.0	-1.7	-1.5	-1.1	-1.0	-1.4